

IV AIRPORT/LAND USE COMPATIBILITY POLICIES

4.1 Introduction

This chapter presents policies and maps relating to the state-mandated airport compatibility factors – noise, safety, and airspace protection. This chapter also presents maps establishing a two-tier AIA within which the state real estate disclosure law related to aircraft overflights and potential airport and aircraft real property impacts shall apply.

The official policy language of the CLUPALUCP is labeled with policy numbers and appears in shaded text boxes. Any non-shaded text provides explanatory information.

One overall land use policy (LP) shall apply to the CLUPALUCP.

LP-1 RELATIONSHIP OF COMPATIBILITY CRITERIA TO PROPOSED LAND USE POLICY ACTIONS

The airport/land use compatibility of a proposed development or land use policy action, as described herein, shall be determined by comparing the proposed land use policy action or development with the safety compatibility criteria, the noise compatibility criteria, and the airspace protection/height limitation criteria contained in this CLUPALUCP. The three sets of criteria are to be used in combination, with the most restrictive requirement controlling on any given property.

A proposed local agency land use policy or development action must be compatible with each of these elements for the Airport Land Use Commission (the C/CAG Board) to determine that the proposed action is consistent with the CLUPALUCP. If a proposed action is incompatible with any of these criteria, the Airport Land Use Commission (the C/CAG Board) shall determine that the proposed action is inconsistent with the CLUPALUCP.

4.2 Airport Influence Area (AIA)

The AIA for SFO includes two parts: Area A and Area B. Area A is the larger of the two areas and encompasses parts of San Mateo County that are subject to regular overflights by aircraft using SFO. Area B lies within Area A and includes land exposed to aircraft noise above CNEL 65 dB or lying within the outer boundary of the FAR Part 77 conical surface.

Area A is defined by the area overflowed an average of at least once per day at altitudes of 10,000 feet or less above mean sea level (MSL) by aircraft flying to and from SFO. **Exhibit IV-1** depicts the density of flight tracks over the Bay Area for all flights to and from SFO in 2007. The local terrain and the high volume of air traffic impose strict limits on the design and use of the airspace in the area. Thus, the overall pattern of aircraft approaches and departures at SFO is unlikely to change substantially over time. In fact, this flight track density pattern has remained essentially the same for years.¹

Exhibit IV-1 also depicts the proposed boundary for Area A. The boundary generally corresponds to the area within San Mateo County overflowed by 366 or more flights per year. It has been adjusted to follow major roads, section lines, and rancho lines to make it easier to identify and implement.

Area B of the AIA, depicted on **Exhibit IV-2**, is based on a combination of the outer boundary of the FAR Part 77 conical surface and the outer noise compatibility planning noise contour. As depicted on Exhibit IV-2, the Area B boundary has been adjusted to follow streets, highways, and corporate boundaries to make it easier to identify and implement. See **Exhibit IV-3** for a close-up view of the northern half of Area B and **Exhibit IV-4** for a close-up view of the southern half.

The following AIA policies (IP) shall apply to the ~~CLUP~~ALUCP.

IP-1 AIRPORT INFLUENCE AREA A – REAL ESTATE DISCLOSURE AREA

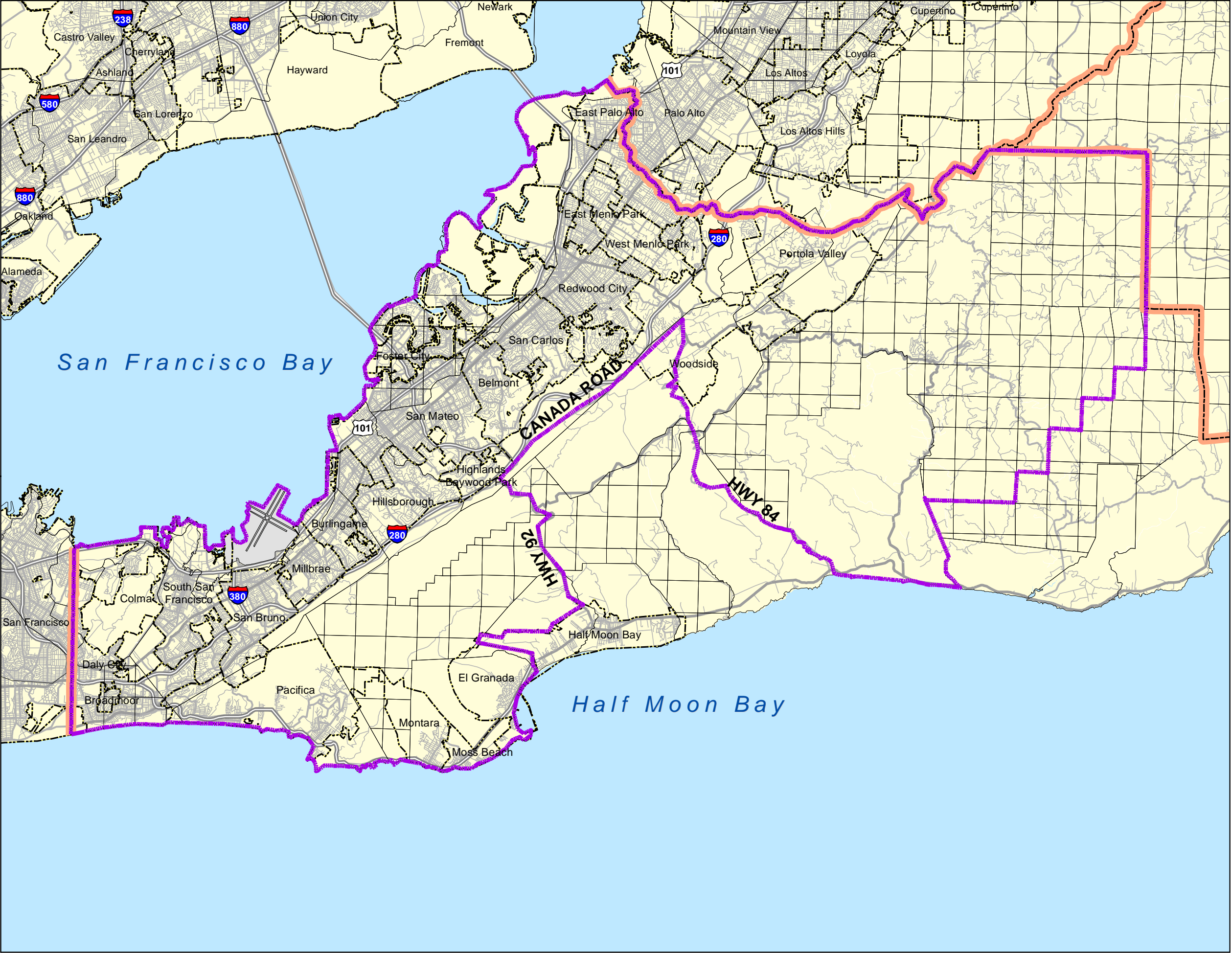
Within Area A, the real estate disclosure requirements of state law apply. Section 11010 of the Business and Professions Code requires people offering subdivided property for sale or lease to disclose the presence of all existing and planned airports within two miles of the property.² The law requires that, if the property is within an “airport influence area” designated by the airport land use commission, the following statement must be included in the notice of intention to offer the property for sale:

NOTICE OF AIRPORT IN VICINITY

This property is presently located in the vicinity of an airport, within what is known as an airport influence area. For that reason, the property may be subject to some of the annoyances or inconveniences associated with proximity to airport operations (for example: noise, vibration, or odors). Individual sensitivities to those annoyances can vary from person to person. You may wish to consider what airport annoyances, if any, are associated with the property before you complete your purchase and determine whether they are acceptable to you.

¹ As part of this analysis, flight track densities for 1999 were also examined. The pattern was substantially the same as shown on Exhibit IV-1.

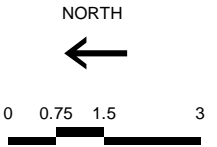
² California Business and Professions Code, Section 11010(b)(13).



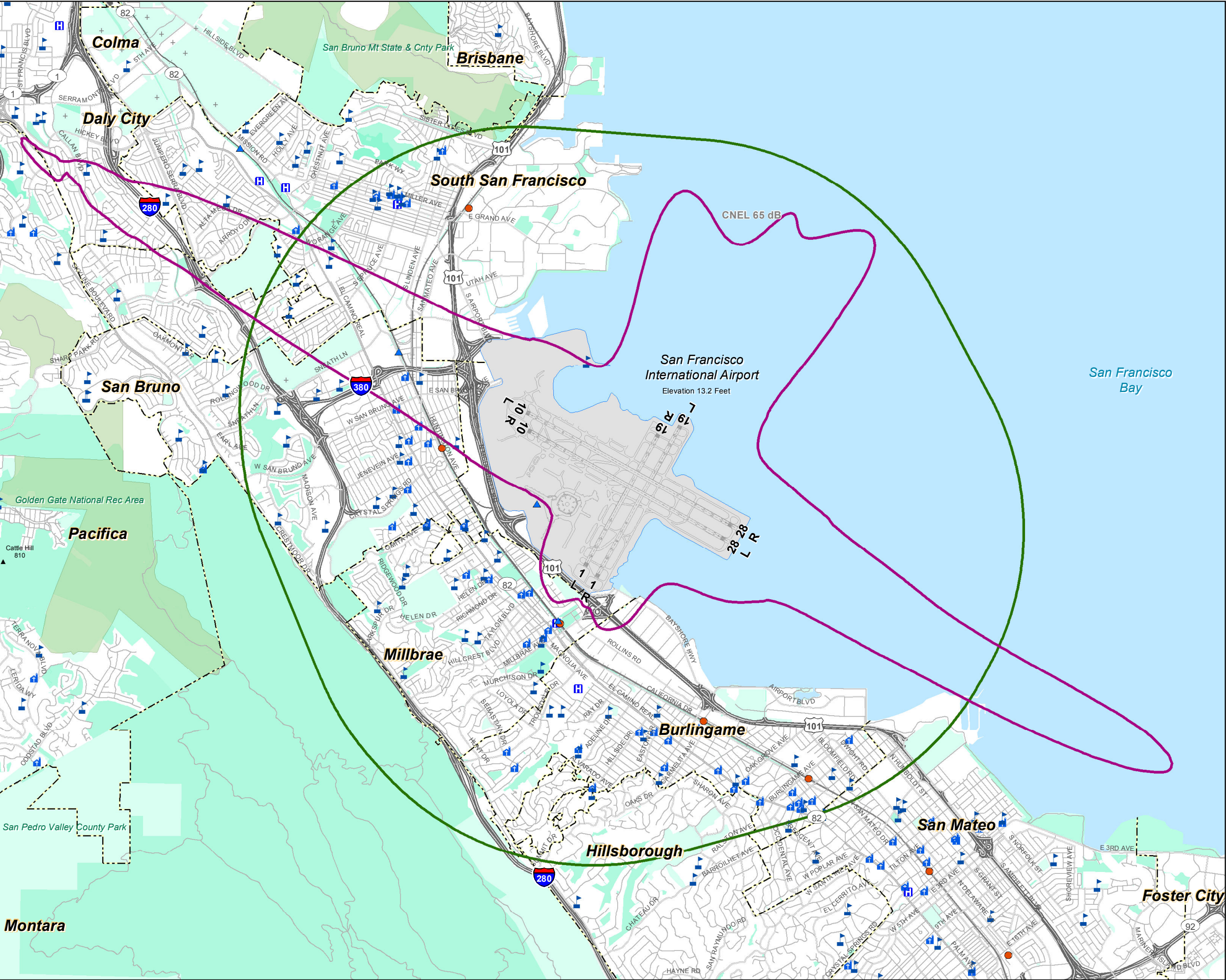
- LEGEND**
- County Boundary
 - City Boundary
 - Range/ Township/ Section and Rancho Lines
 - Freeways
 - Roads
 - Airport Influence Area A Boundary

Note: Data includes only flights to and from San Francisco International Airport at or below 10,000 feet above mean sea level.

Flight track density data source: SFO Noise Office, March 2009. Data for 2007 calendar year.



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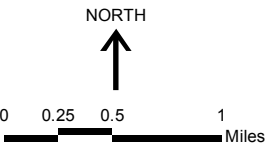
LEGEND

- Boundary for Airport Influence Area B
- CNEL Contour, 2020 Forecast
- 14 CFR Part 77 Conical Surface
- Airport Property
- BART Station
- CALTRAIN Station
- School
- Place of Worship
- Hospital
- Municipal Boundary
- Railroad
- Freeway
- Road
- Local Park, Golf Course, Cemetery
- Regional Park or Recreation Area
- Open Space

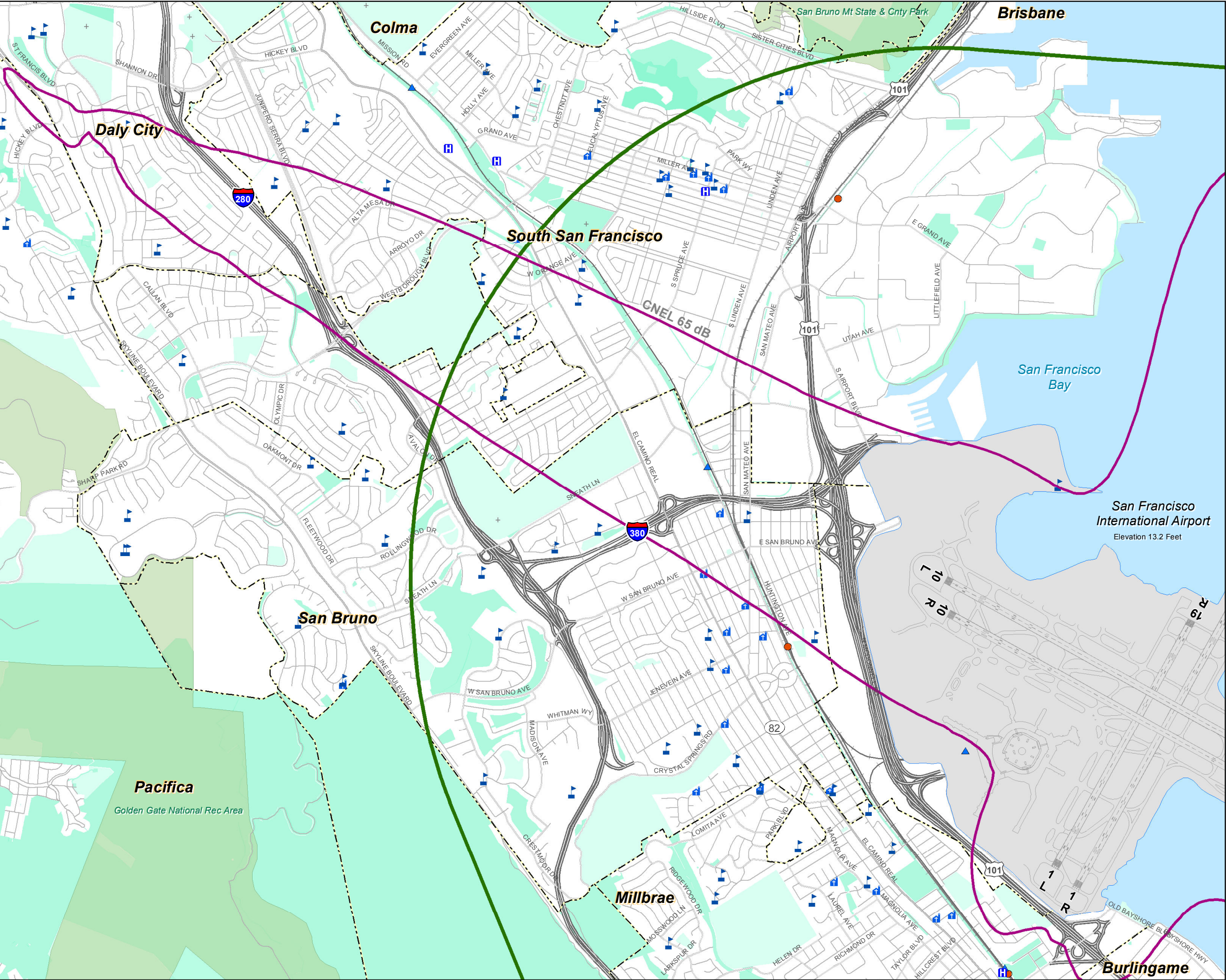
Sources:

14 CFR Part 77 Surfaces: City and County of San Francisco, Ricondo & Associates, Inc., 2010

Noise Contour: URS Corporation and BridgeNet International. Draft Environmental Assessment, San Francisco International Airport Proposed Runway Safety Area Program, June 2011



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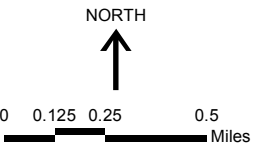
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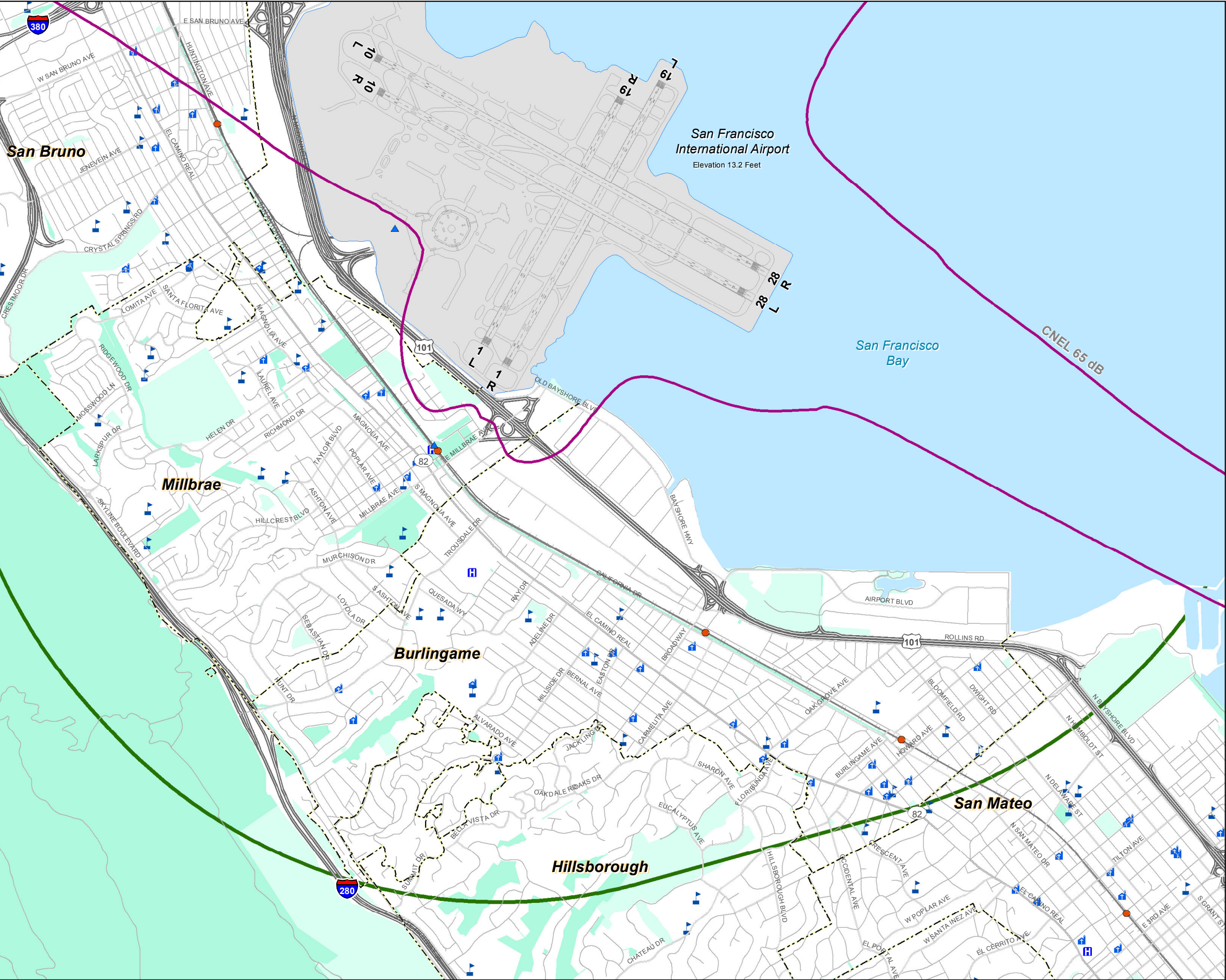
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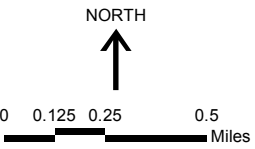
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Noise Contour: URS Corporation and BridgeNet International. Draft Environmental Assessment, San Francisco International Airport Proposed Runway Safety Area Program, June 2011



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IP-2 AIRPORT INFLUENCE AREA B – POLICY/PROJECT REFERRAL AREA

Within Area B, the Airport Land Use Commission (the C/CAG Board) shall exercise its statutory duties to review proposed land use policy actions, including new general plans, specific plans, zoning ordinances, plan amendments and rezonings, and related land development proposals. The real estate disclosure requirements in Area A also apply in Area B. Portions of unincorporated San Mateo County and the following municipalities are located within Area B:

- Daly City – small part of the city in the Serramonte area
- South San Francisco – all but north and west sides of the city
- San Bruno – all but northwest corner of the city
- Millbrae – all of the city
- Burlingame – all of the city
- Hillsborough – the northern part of the town, north of Chateau Drive
- Unincorporated San Mateo County: California Golf Club, Country Club Park, Burlingame Hills, and San Francisco International Airport

The following special districts are located within Area B of the AIA:

- North San Mateo County Sanitation District
- Peninsula Health Care District
- San Mateo County Flood Control District
- San Mateo County Harbor District
- San Mateo County Mosquito & Vector Control District
- Westborough County Water District

The following school districts and community college district are located within Area B:

- Burlingame School District
- Hillsborough City Elementary School District
- Jefferson Union High School District
- Millbrae Elementary School District
- San Bruno Park Elementary School District
- San Mateo County Community College District
- San Mateo Foster City Elementary School District
- San Mateo Union High School District
- South San Francisco Unified School District

4.3 Noise Compatibility Policies

The airport noise compatibility policies described in this section have a two-fold purpose:

1. To protect the public health, safety, and welfare by minimizing the exposure of residents and occupants of future noise-sensitive development to excessive noise.
2. To protect the public interest in providing for the orderly development of SFO by ensuring that new development in the Airport environs complies with all requirements necessary to ensure compatibility with aircraft noise in the area. The intent is to avoid the introduction of new incompatible land uses into the Airport's "noise impact area" so that the Airport will continue to be in compliance with the State Noise Standards for airports (California Code of Regulations, Title 21, Sections 5012 and 5014).³

The following noise compatibility policies (NP) shall apply to the ~~CLUPALUCP~~.

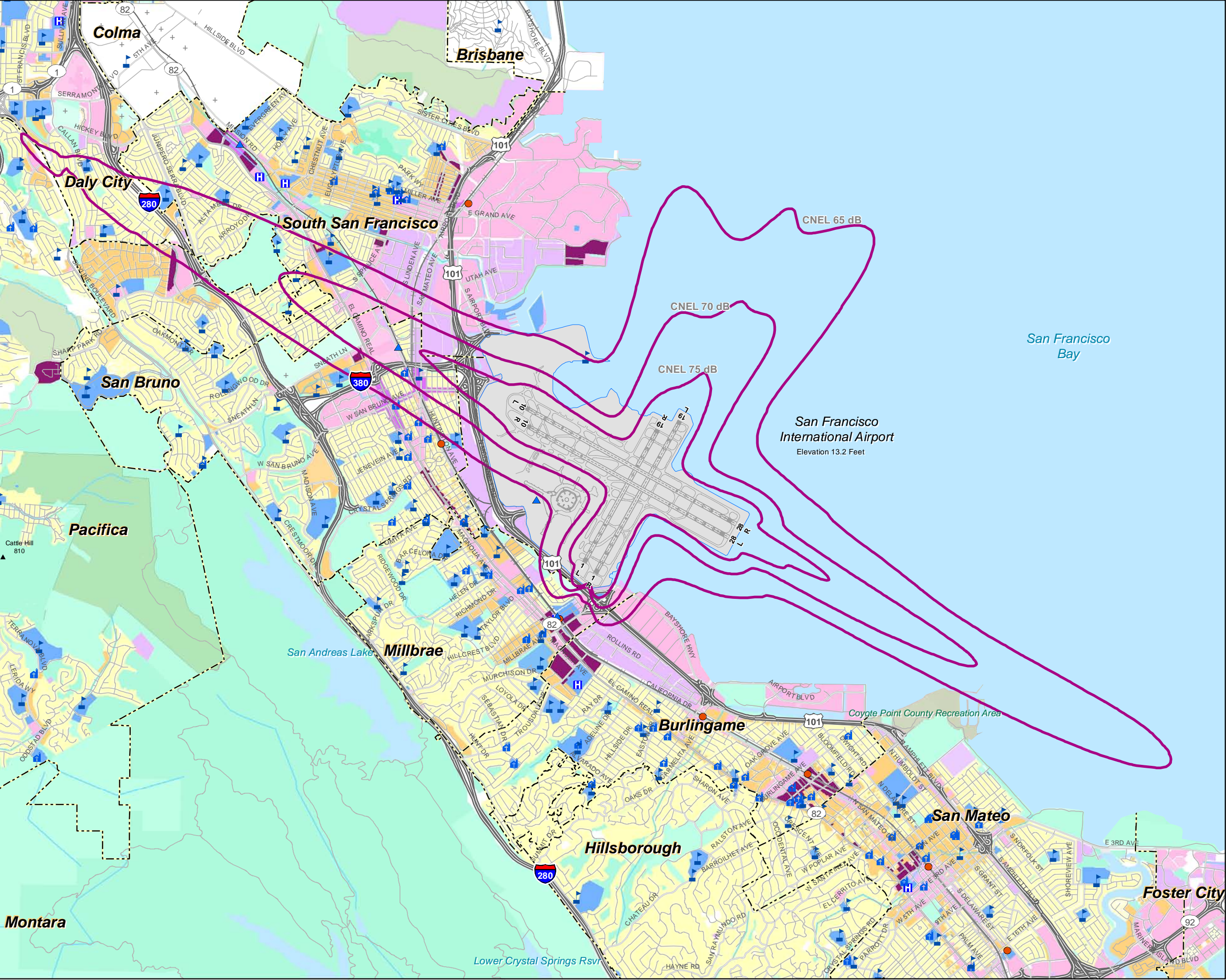
NP-1 NOISE COMPATIBILITY ZONES

For the purposes of this ~~CLUPALUCP~~, the projected 2020 CNEL noise contour map from the Draft Environmental Assessment for the Proposed Runway Safety Area Program shall define the boundaries within which noise compatibility policies described in this Section shall apply.⁴ **Exhibit IV-5** depicts the noise compatibility zones. More detail is provided on **Exhibit IV-6**. The zones are defined by the CNEL 65, 70 and 75 dB contours.

Although the contours were established using the best available information at the time, noise contours are subject to changes that can be difficult to predict over long periods of time. The primary causes of change in the noise contours at SFO are most likely to be changes in the numbers of operations (arrivals and departures) and in the mix of aircraft using the airport. The patterns of runway use and flight tracks are unlikely to change substantially due to the nature of local weather patterns, topography, and the presence of other airports and air traffic in the metropolitan area.

³ In 2002, the San Mateo County Board of Supervisors declared that the Airport had eliminated its "noise impact area," as defined under state law -- California Code of Regulations, Title 21, Sections 5012 and 5014.

⁴ URS Corporation and BridgeNet International. *Draft Environmental Assessment, Proposed Runway Safety Area Program, San Francisco International Airport*, June 2011.



LEGEND

CNEL Contour, 2020 Forecast

Airport Property

BART Station

CALTRAIN Station

School

Place of Worship

Hospital

Municipal Boundary

Railroad

Freeway

Road

Planned Land Use Per General Plans:

Public

Multi-Family Residential

Single Family Residential

Mixed Use

Transit Oriented Development

Commercial

Industrial, Transportation, and Utilities

Local Park, Golf Course, Cemetery

Regional Park or Recreation Area

Open Space

Planned use not mapped

Sources:

Noise Contour Data:

- Draft Environmental Assessment, Proposed Runway Safety Area Program, San Francisco International Airport. URS Corporation and BridgeNet International, June 2011

County Base Maps:

- San Mateo County Planning & Building Department, 2007

Local Plans:

- Burlingame Bayfront Specific Area Plan, August 2006

- Burlingame Downtown Specific Plan, January 2009

- Burlingame General Map, September 1984

- North Burlingame/ Rollins Road Specific Plan, February 2007

- Colma Municipal Code Zoning Maps, December 2003

- Daly City General Plan Land Use Map, 1987

- Hillsborough General Plan, March 2005

- Millbrae Land Use Plan, November 1998

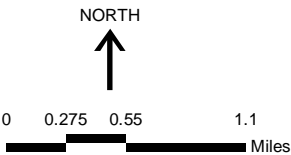
- Pacifica General Plan, August 1996

- San Bruno General Plan, December 2008

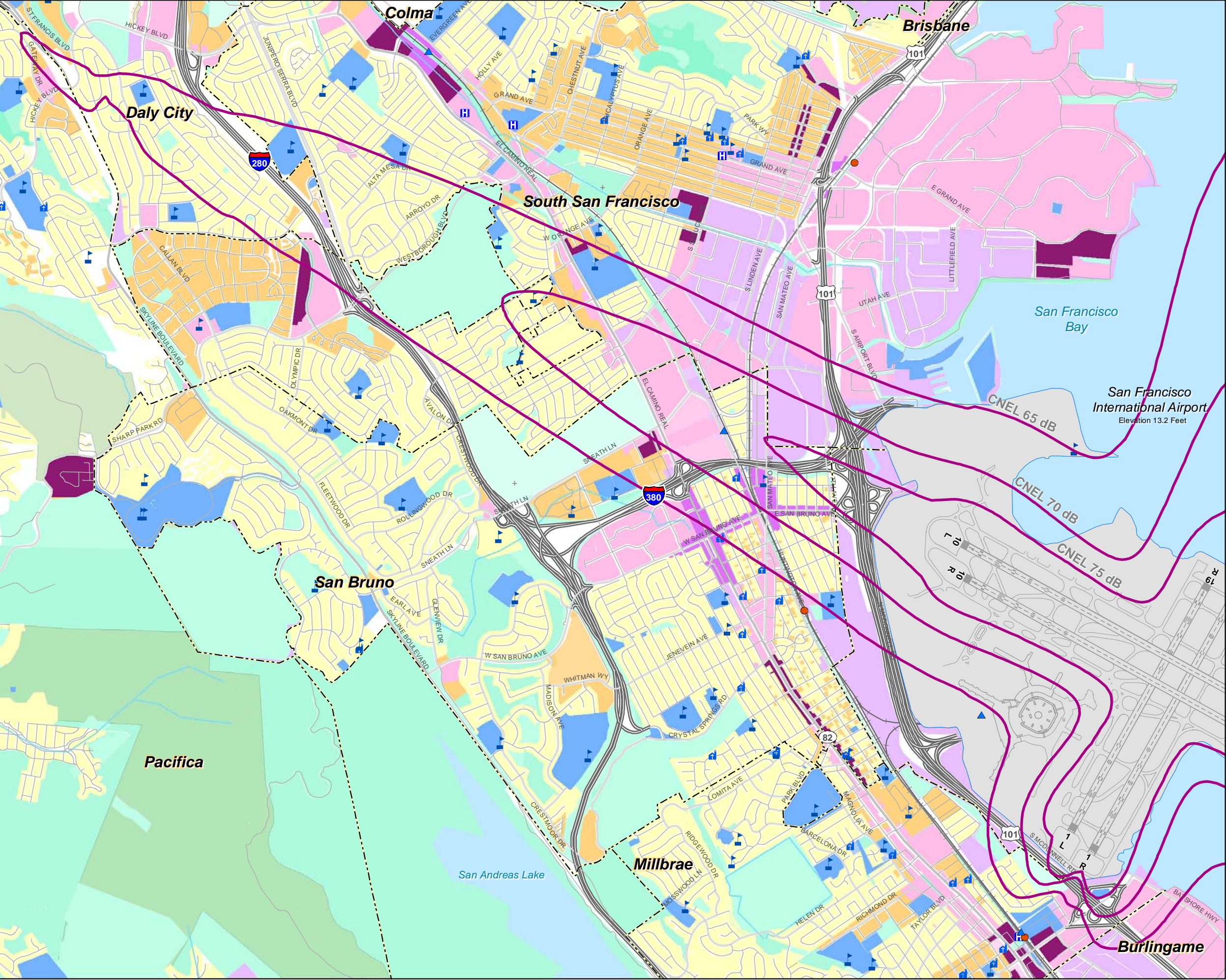
- San Mateo City Land Use Plan, March 2007

- San Mateo County Zoning Map, 1992

- South San Francisco General Plan, 1998



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LEGEND

CNEL Contour, 2020 Forecast

Airport Property

BART Station

CALTRAIN Station

School

Place of Worship

Hospital

Municipal Boundary

Railroad

Freeway

Road

Planned Land Use Per General Plans:

Public

Multi-Family Residential

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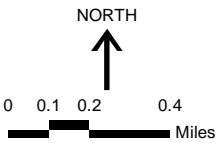
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- San Mateo City Land Use Plan, March 2007

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NP-2 AIRPORT NOISE/LAND USE COMPATIBILITY CRITERIA

The compatibility of proposed land uses located in the Airport noise compatibility zones shall be determined according to ~~conform~~ to the noise/land use compatibility criteria shown in **Table IV-I**. The criteria indicate the maximum acceptable airport noise levels, described in terms of Community Noise Equivalent Level (CNEL), for the indicated land uses. The compatibility criteria indicate whether a proposed land use is “compatible,” “conditionally compatible,” or “not compatible” within each zone, designated by the identified CNEL ranges.

- “Compatible” shall mean that the proposed land use is compatible with the CNEL level indicated in the table and ~~may~~shall be permitted without any special requirements related to the attenuation of aircraft noise.
- “Conditionally compatible” shall mean that the proposed land use is compatible if, ~~subject to~~ the conditions described ~~indicated~~ in Table IV-I, ~~and that it shall be permitted if the required conditions are met.~~
- “Not compatible” shall mean that the proposed land use is incompatible with aircraft noise at the indicated CNEL level, ~~and shall not be permitted.~~

NP-3 GRANT OF AVIGATION EASEMENT

Any action that would either permit or result in the development or construction of a land use considered to be conditionally compatible with aircraft noise in a range of CNEL 65 dB or greater shall be subject to this easement requirement. The determination of conditional compatibility shall be based on the criteria presented in Table IV-I “Noise/Land Use Compatibility Criteria.”

The San Mateo County Airport Land Use Commission (the C/CAG Board) deems it necessary to: (1) ensure the unimpeded use of airspace in the vicinity of SFO and (2) to provide notice to owners of real property near the Airport of the proximity to SFO and of the potential impacts that could occur on the property from airport/aircraft operations. Thus, C/CAG shall condition its approval of proposed development upon the owner of the subject property granting an avigation easement to the City and County of San Francisco, as the proprietor of SFO. The local government with the ultimate permitting and approval authority over the proposed development shall ensure that this condition is implemented prior to final approval of the proposed development. If the approval action for the proposed development includes construction of a building(s) and/or other structures, the local permitting authority shall require the grant of an avigation easement to the City and County of San Francisco prior to issuance of a building permit(s) for the proposed building or structure. If the proposed development is not built, then, upon notice by the local permitting authority, SFO will revoke the avigation easement.

The avigation easement to be used in fulfilling this condition is presented in **Appendix G**.

[Draft Final]

Table IV-I Noise/Land Use Compatibility Criteria

COMMUNITY NOISE EQUIVALENT LEVEL (CNEL)				
LAND USE	BELOW 65 dB	65-70 dB	70-75 dB	75 dB AND OVER
Residential				
Residential, single family detached	Y	C	N (a)	N
Residential, multi-family and single family attached	Y	C	N (a)	N
Transient lodgings	Y	C	C	N
Public/Institutional				
Public and Private Schools	Y	C	N	N
Hospitals and nursing homes	Y	C	N	N
Places of public assembly, including places of worship	Y	C	N	N
Auditoriums, and concert halls	Y	C	C	N
Libraries	Y	C	C	N
Outdoor music shells, amphitheaters	Y	N	N	N
Recreational				
Outdoor sports arenas and spectator sports	Y	Y-(e)	Y-(e)	N
Nature exhibits and zoos	Y	Y	N	N
Amusements, parks, resorts and camps	Y	Y	Y	N
Golf courses, riding stables, and water recreation	Y	Y	Y	Y
Commercial				
Offices, business and professional, general retail	Y	Y	Y	Y
Wholesale; retail building materials, hardware, farm equipment	Y	Y	Y	Y
Industrial and Production				
Manufacturing	Y	Y	Y	Y
Utilities	Y	Y	Y	Y
Agriculture and forestry	Y	Y (b)	Y (cd)	Y (cd)
Mining and fishing, resource production and extraction	Y	Y	Y	Y

Notes:

CNEL = Community Noise Equivalent Level, in A-weighted decibels.

Y (Yes) = Land use and related structures compatible without restrictions.

C (conditionally compatible) = Land use and related structures are permitted, provided that sound insulation is provided to reduce interior noise levels from exterior sources to CNEL 45 dB or lower and that an avigation easement is granted to the City and County of San Francisco as operator of SFO. See Policy NP-3.

N (No) = Land use and related structures are not compatible and are prohibited.

(a) Use is compatible only permitted under the following conditions (1) on an existing lot of record if zoned for residential use, (2) on a lot abutting El Camino Real (the Grand Boulevard), or (3) on a lot immediately adjacent to a BART Station. Use must be sound-insulated to achieve an indoor noise level of CNEL 45 dB or less from exterior sources. The property owners shall grant an avigation easement to the City and County of San Francisco prior to issuance of a building permit(s) for the proposed building or structure. If the proposed development is not built, then, upon notice by the local permitting authority, SFO will revoke the avigation easement.

(b) Residential buildings must be sound-insulated to achieve an indoor noise level of CNEL 45 dB or less from exterior sources.

~~(c) — Land use is compatible provided special sound reinforcement systems are installed.~~

~~(cd) Accessory dwelling units are not permitted compatible.~~

SOURCES: Jacobs Consultancy Team 2010. Based on State of California General Plan Guidelines for noise elements of general plans; California Code of Regulations, Title 21, Division 2.5, Chapter 6, Section 5006; and 14 CFR Part 150, Appendix A, Table I.

[Draft Final]

PREPARED BY: Ricondo & Associates, Inc., February 2012.

4.4 Safety Compatibility Policies

The safety compatibility policies are established with a twofold purpose:

1. To protect the public health, safety, and welfare by minimizing the public's exposure to the risk associated with potential aircraft accidents in the Airport vicinity.
2. To protect the public interest in providing for the orderly development of SFO by preventing the creation of new safety problems in the Airport environs.

Compared to noise, safety is a much more difficult concern to address in airport/land use compatibility policies. A major reason is that safety policies address uncertain events that may occasionally occur with aircraft operations, whereas noise policies deal with known, more or less predictable, events that occur with every aircraft operation.

Because aircraft accidents happen infrequently, and the time, place, and consequences of their occurrence cannot be accurately predicted, the concept of risk is central to the assessment of safety compatibility. In terms of airport/land use compatibility planning, two questions must be addressed to determine the relative degree of risk posed by potential aircraft accidents in various locations:

- Accident Frequency – Where and when do aircraft accidents typically occur in the vicinity of an airport?
- Accident Severity – What aircraft and land use characteristics contribute to the consequences of an accident when one occurs?

The overall objective of safety compatibility guidelines is to minimize the risks associated with potential aircraft accidents. There are two components to this objective:

- Safety of Persons on the Ground – The most fundamental safety compatibility component is to provide for the safety of people and property on the ground in the event of an aircraft accident near an airport.
- Safety of Aircraft Occupants – The other safety compatibility component is to enhance the chances of survival of the occupants of an aircraft involved in an accident that occurs beyond the runway environment.

The guidance in the Caltrans *Airport Land Use Planning Handbook* is based on an analysis of the factors described above.⁵ That guidance, however, is highly generalized. To the extent applicable, that guidance has been applied to the SFO vicinity, with adjustments based on the particular operating characteristics of the Airport. The rationale for the definition of safety zones and policies is discussed in **Appendix E** of this [CLUPALUCP](#).

⁵ California Department of Transportation, Division of Aeronautics, *California Airport Land Use Planning Handbook*, October 2011, pp. 3-11 – 3-28, 4-13 – 4-34, and Appendices E and F.

The following safety compatibility policies (SP) shall apply to the ~~CLUP~~PALUCP.

SP-1 SAFETY COMPATIBILITY ZONES

Exhibit IV-7 depicts the safety compatibility zones in the vicinity of SFO. ~~Four~~Five zones are established, as follows:

- **Zone 1 -- Runway Protection Zone and Object Free Area (RPZ-OFA):** Zone 1 includes the RPZ and the OFA, areas ~~The RPZ is an area~~ defined according to FAA airport design criteria.⁶ The RPZ~~is~~ is a trapezoid-shaped area off each runway end, with the dimensions based on the runway approach visibility minimums and the type of aircraft using the runway. The OFA is a rectangular area centered on each runway within which objects, other than those serving a specific aeronautical purpose, are to be prohibited. ~~Zone 1~~The RPZ is an area of relatively high accident risk that FAA encourages airport proprietors to own and keep free of objects, structures, and incompatible uses, including places of assembly (housing, churches, schools, shopping centers, hospitals, and the like), fuel storage, and wildlife attractants.
- **Zone 2 -- Inner Approach/Departure Zone (IADZ):** Zone 2, the IADZ, is designated along the extended centerline of each runway beginning at the outer edge of the RPZ. It is an area of secondary accident risk that tends to be overflowed by most aircraft arrivals and departures off ~~each~~that runway end.
- **Zone 3 -- Inner Turning Zone (ITZ):** Zone 3, the ITZ, lies alongside the RPZ and IADZ. It is an area overflowed by aircraft making turns at low altitude immediately after takeoff. It tends to be subject to lower accident risk than the IADZ.
- **Zone 4 -- Outer Approach/Departure Zone (OADZ):** Zone 4, the OADZ, extends along the extended runway centerline immediately beyond the IADZ. It is subject to overflights of aircraft on approach and straight-out departures. At SFO, the OADZ off the west end of Runways 10R-28L and 10L-28R is overflowed by a high proportion of departures using Runways 28L and 28R, especially long-haul departures by heavy, wide-body aircraft.
- **Zone 5 -- Sideline Zone (SZ):** Zone 5, the SZ, is a rectangular area centered on each runway centerline with a width of 2,000 feet and a length extending 200 feet beyond each runway end. This area is subject to accident risks associated with aircraft losing directional control on takeoff or after landing. At SFO, the SZ is entirely on Airport property.

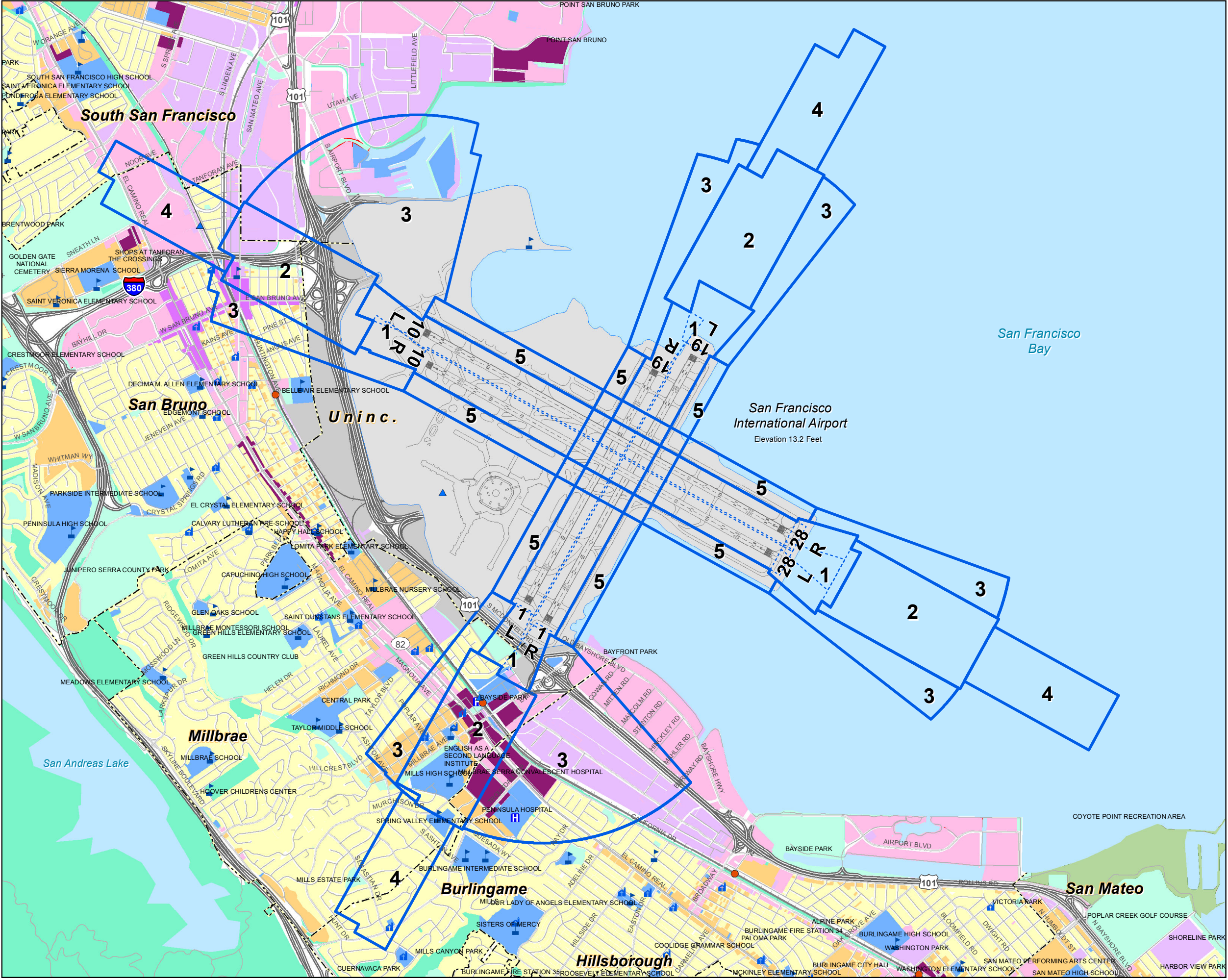
Exhibit IV-8 presents a close-up view of the safety zones off the west end of Runways 10L-28R and 10R-28L. The RPZs have the following dimensions: 500-foot inner width, 1,010-foot outer width, and 1,700-foot length.

⁶ FAA Advisory Circular 150/5300-13, Airport Design, Section 211 and 307.

Zone 2 (the IADZ) off each runway extends 4,300 feet beyond the RPZ, with the lateral boundaries extending 750 feet on either side of the extended runway centerline. Zone 4, (the OADZ) extends 4,000 feet beyond Zone 2 the IADZ, with the lateral boundaries extending 500 feet either side of the extended runway centerline.

Zone 3, (the ITZ) extends 6,000 feet from the inner edge of the RPZ on both sides of Zone 2. On the north side, the shape of Zone 3 the ITZ is designedintended to capture the area overflown by departures turning right on standard instrument departure routes.⁷ covered by right hand departure turns. The eastern boundary follows a radial 75 degrees northeast of the extended runway centerline. Note that no ITZ is on the south side of the extended runway centerline. This is because no aircraft turn over this area (see Appendix E for more discussion of the rationale for the safety zone boundaries).

⁷ Three published instrument departures at SFO require aircraft using Runways 28L and 28R to turn right immediately after takeoff – the Quiet Two, the Rebas, and the Shoreline One departures. <http://www.airnav.com/airport/KSFO>, accessed February 20, 2012.



LEGEND

Safety Compatibility Zones

1

1 - Runway Protection Zone-Object Free Area

2

2 - Inner Approach/Departure Zone

3

3 - Inner Turning Zone

4

4 - Outer Approach/Departure Zone

5

5 - Sideline Zone

--- Internal boundaries of ALP-defined areas

Airport Property

BART Station

CALTRAIN Station

School

Place of Worship

Hospital

Municipal Boundary

Railroad

Freeway

Road

Planned Land Use Per General Plans:

Public

Multi-Family Residential

Single Family Residential

Mixed Use

Transit Oriented Development

Commercial

Industrial, Transportation, and Utilities

Local Park, Golf Course, Cemetery

Regional Park or Recreation Area

Open Space

Planned use not mapped

Sources:

Safety Compatibility Zones:

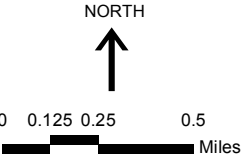
- Jacobs Consultancy Team, 2009; Ricondo & Associates, Inc., 2011

County Base Maps:

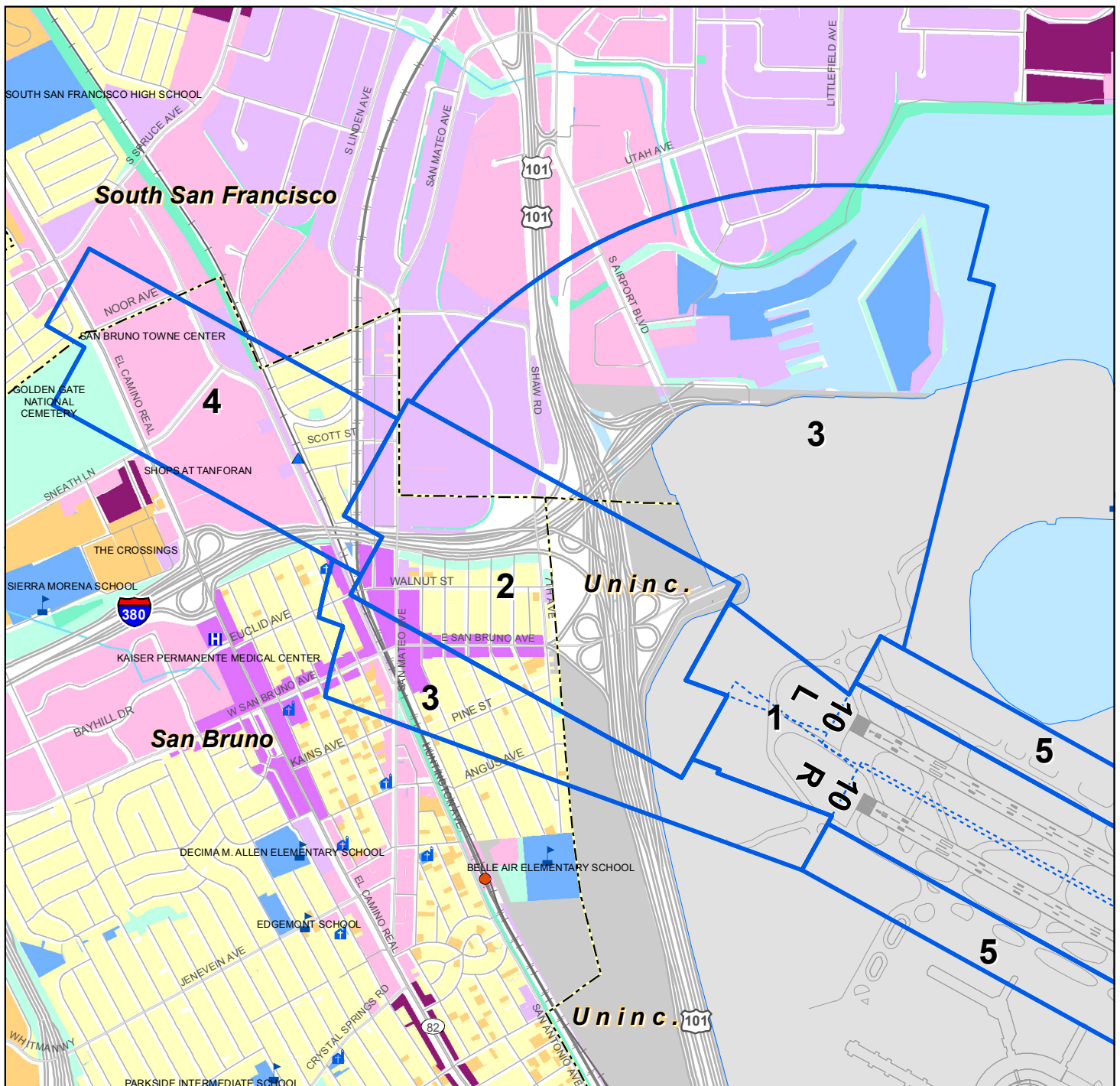
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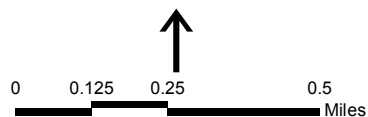
Safety Compatibility Zones

- 1 1 - Runway Protection Zone-Object Free Area
- 2 2 - Inner Approach/Departure Zone
- 3 3 - Inner Turning Zone
- 4 4 - Outer Approach/Departure Zone
- 5 5 - Sideline Zones
- Internal boundaries of ALP-defined areas
- Airport Property
- ▲ BART Station
- CALTRAIN Station
- ▲ School
- ✠ Place of Worship
- H Hospital
- Municipal Boundary
- Railroad
- Freeway
- Major Road
- Road

Planned Land Use Per General Plans

- Public
- Multi-Family Residential
- Single Family Residential
- Mixed Use
- Transit Oriented Development
- Commercial
- Industrial, Transportation, and Utilities
- Local Park, Golf Course, Cemetery
- Regional Park or Recreation Area
- Open Space

NORTH



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Exhibit IV-9 depicts the safety zones off the south end of Runways 1L-19R and 1R-19L. In Zone 1, the RPZs have a 500-foot inner width, 1,010-foot outer width and 1,700-foot length. Zone 2 (the IADZ) extends 4,300 3,300 feet from the outer edge of the RPZ and is 1,010 1,500 feet wide, centered on the extended runway centerline. Zone 3 (the ITZ) extends 6,000 5,000 feet from the inner edge of each RPZ. On the east side, Zone 3-and is fanned 70 degrees east of the extended runway centerline. This reflects the left departure turns made by nearly all aircraft taking off on Runways 19L and 19R and 19R.⁸ Zone 4, the OADZ, extends 4,000 feet beyond the end of Zone 2. off each runway. No ITZ is on the opposite side of the extended runway centerline because no turns are made over that area. Note that no OADZ is defined off the south ends of the runways. This is because that runway end is used very rarely, and all approaches and departures avoid flying over the extended runway centerline because of the high terrain in that area.

SP-2 SAFETY COMPATIBILITY LAND USE CRITERIA

The land use compatibility criteria for safety are established in ~~The land uses that would be allowed by proposed land use policy actions affecting real property located within the Airport's safety zones, as defined herein, shall conform to the safety compatibility criteria of~~ **Table IV-2.** The safety compatibility criteria are generally based on the guidelines provided in the *California Airport Land Use Planning Handbook*, although modifications have been made in recognition of the intense level of existing development in the airport vicinity. See Appendix E for a discussion of the factors that were considered in establishing the safety compatibility policies.

The criteria include two categories – uses that are ~~incompatible prohibited~~ and uses that ~~should are to~~ be avoided in the respective zones.

- ~~Incompatible Prohibited~~ Uses – uses that are ~~incompatible within not to be permitted in~~ the safety zone.
- Uses to be Avoided – uses that should not be ~~allowed in the safety zonepermitted~~ unless no feasible alternative is available, as determined by the land use agency with permitting authority. Where these uses are allowed, habitable structures shall be provided with at least 50 percent more exits than required by applicable codes. If the 50 percent calculation results in a fraction, the fractional number shall be rounded up to the next whole number.

ZONE 1 – RUNWAY PROTECTION ZONE AND OBJECT FREE AREA (RPZ-OFA)

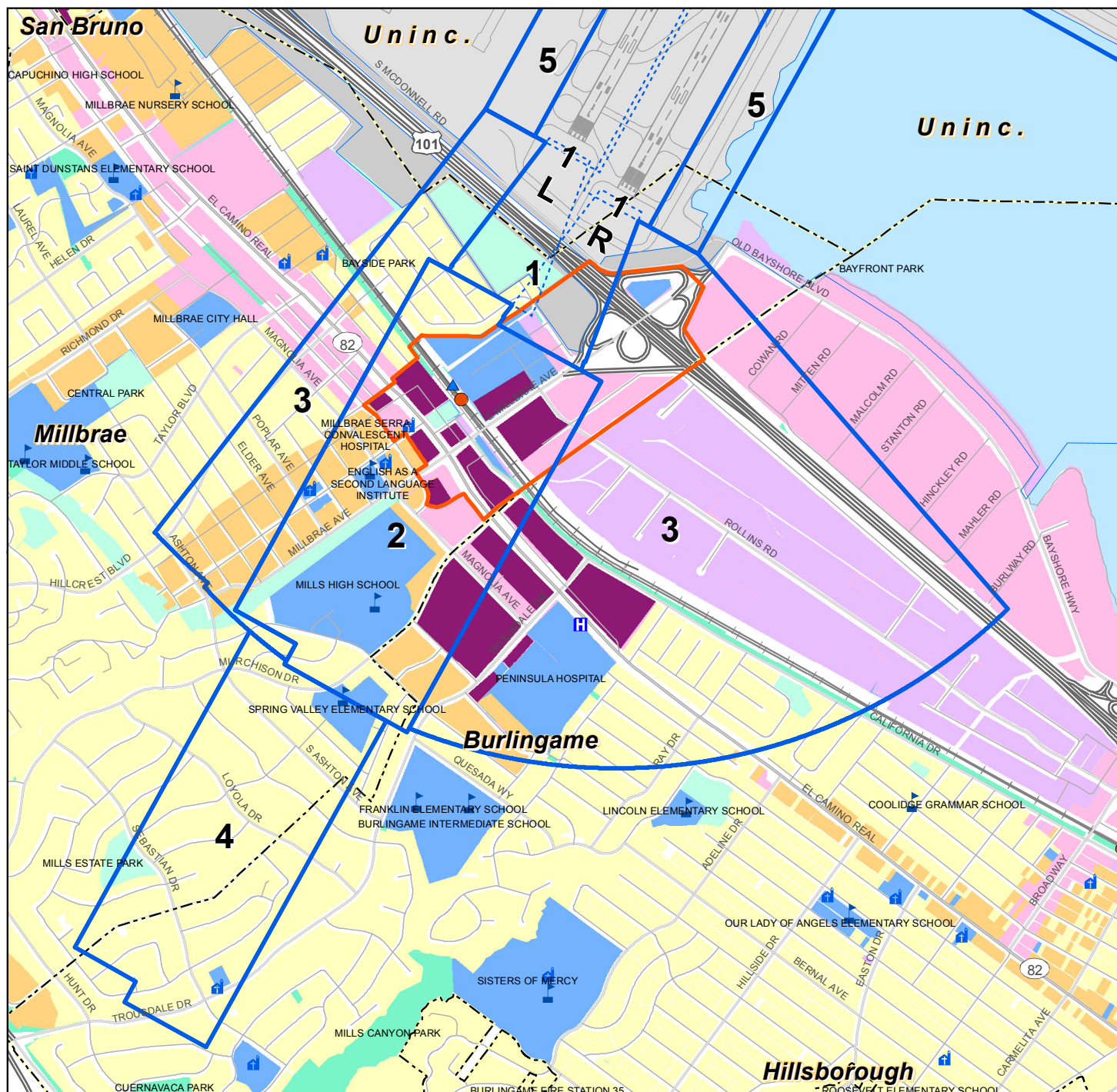
Zone 1 ~~The RPZ~~ is the zone where the accident risk is highest. At SFO, the RPZs for Runways 10R and 10L are on Airport property or on public highway right-of-way. Most of the RPZs for Runways 1L and 1R are on Airport property or public right-of-way. Part of the RPZs lie in Bayside Park and small areas extend onto private property. All of the OFAs (Object Free Areas) are on Airport property

⁸ All published instrument departure procedures for Runways 19L and 19R require aircraft to turn left immediately after takeoff. <http://www.airnav.com/airport/KSFO>, accessed February 20, 2012.

The compatibility criteria presented in Table IV-2 prohibit all new structures in Zone 1 ~~the RPZs~~. All but very low intensity nonresidential uses, at the outer edges of the RPZs, are to be avoided. Examples of potentially acceptable nonresidential uses include parking lots and outdoor equipment storage.

ZONE 2 -- INNER APPROACH/DEPARTURE ZONE (IADZ)

In Zone 2, the IADZ, a variety of uses are prohibited that involve hazardous materials, critical public utilities, and those accommodating potentially vulnerable populations – such as children’s schools, all child day care facilities, hospitals, and nursing homes.



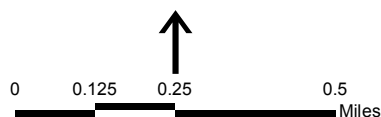
LEGEND

Safety Compatibility Zones

- 1 1 - Runway Protection Zone-Object Free Area
- 2 2 - Inner Approach/Departure Zone
- 3 3 - Inner Turning Zone
- 4 4 - Outer Approach/Departure Zone
- 5 5 - Sideline Zones
- Internal boundaries of ALP-defined areas
- Millbrae Station Area Specific Plan
- Airport Property
- ▲ BART Station
- CALTRAIN Station
- ✈ School
- ✈ Place of Worship
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Planned Land Use Per General Plans

- Public
- Multi-Family Residential
- Single Family Residential
- Mixed Use
- Transit Oriented Development
- Commercial
- Industrial, Transportation, and Utilities
- Local Park, Golf Course, Cemetery
- Regional Park or Recreation Area
- Open Space



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[Draft Final]

Table IV-2 Safety Compatibility Criteria

ZONE	LAND USE CRITERIA	
	PROHIBIT INCOMPATIBLE ^{1/}	AVOID ^{1/}
Zone 1: Runway Protection Zone and Object Free Area (RPZ-OFA)		
	All new structures ^{2/} Places of assembly not in structures Hazardous uses ^{1/} Critical public utilities ^{1/} Wildlife attractants	Nonresidential uses except very low intensity uses ^{3/} in the "controlled activity area." ^{1/}
Zone 2: Inner Approach/Departure Zone (IADZ)		
	Children's schools ^{1/} All child day care facilities (including family day care homes and noncommercial employer-sponsored centers ancillary to a place of business) Hospitals, nursing homes Hazardous uses ^{1/} Critical public utilities ^{1/}	---
Zone 3: Inner Turning Zone (ITZ)		
	<u>Biosafety Level 3 and 4 facilities^{1/}</u> Children's schools ^{1/} Large child day care centers ^{1/} Hospitals, nursing homes	Hazardous uses <u>other than Biosafety Level 3 and 4 facilities^{1/}</u> Critical public utilities ^{1/}
Zone 4: Outer Approach/Departure Zone (OADZ)		
	<u>Biosafety Level 3 and 4 facilities^{1/}</u> Children's schools ^{1/} Large child day care centers ^{1/} Hospitals, nursing homes	Hazardous uses <u>other than Biosafety Level 3 and 4 facilities^{1/}</u> Critical public utilities ^{1/}
<u>Zone 5: Sideline Zone (SZ)</u>		
	<u>Children's schools^{1/}</u> <u>All child day care facilities (including family day care homes and noncommercial employer-sponsored centers ancillary to a place of business)</u> <u>Hospitals, nursing homes</u> <u>Hazardous uses^{1/}</u> <u>Critical public utilities^{1/}</u>	---

Notes:

1/ Definitions

Avoid: Use should not be permitted unless no feasible alternative is available. Where use is allowed, habitable structures shall be provided with at least 50 percent more exits than required by applicable codes.

Biosafety Level 3 and 4 facilities: Medical and biological research facilities involving the storage and processing of extremely toxic or infectious agents. See Policy SP-3 for additional detail.

Aboveground-bulk storage of fuel: Tank size greater than 6,000 gallons (based on Uniform Fire Code criteria which are more stringent for larger tanks).

Children's schools: Public and private schools serving preschool through grade 12, excluding commercial services.

[Draft Final]

Controlled Activity Area: The lateral edges of the RPZ, outside the Runway Safety Area (RSA) and the extension of the RSA, which extends to the outer edge of the RPZ. See FAA Advisory Circular 150/5300-13, Airport Design, Section 212a.(1)(b).

Critical public utilities: Facilities that, if disabled by an aircraft accident, could lead to public safety or health emergencies. Examples include electrical power generation plants, electrical substations, wastewater treatment plants, and public water treatment facilities.

Hazardous uses: Uses involving the manufacture, storage, or processing of flammable, explosive, or toxic materials that would substantially aggravate the consequences of an aircraft accident. See Policy SP-3 for additional detail. They include manufacturing or storage of large quantities of flammable, explosive, or poisonous materials and aboveground bulk storage of fuel.

incompatible. Use shall not be permitted under any circumstances.

Large child day care centers: Commercial facilities defined in accordance with Health and Safety Code, Section 1596.70, et seq., and licensed to serve 15 or more children. Family day care homes and noncommercial employer-sponsored facilities ancillary to place of business are allowed.

2/ Structures serving specific aeronautical functions are allowed, in compliance with applicable FAA design standards.

3/ Examples include parking lots and outdoor equipment storage.

SOURCE: Ricondo & Associates, Inc., February 2012.

PREPARED BY: Ricondo & Associates, Inc., February 2012.

ZONE 3 -- INNER TURNING ZONE (ITZ)

The compatibility criteria in Zone 3, the ITZ, are somewhat less restrictive than in Zone 2 the IADZ. This is because the area is subject to less accident risk by virtue of the lower density of overflights in this area. In Zone 3 the ITZ, uses accommodating potentially vulnerable populations are prohibited. Hazardous uses and critical public utilities are not prohibited in Zone 3 the ITZ, but are classified as uses to be avoided. This means that they should not be permitted unless no feasible alternative is available.

ZONE 4 - OUTER APPROACH/DEPARTURE ZONE (OADZ)

The compatibility criteria in Zone 4, the OADZ, are the same as in Zone 3, the ITZ.

ZONE 5 – SIDELINE ZONE (SZ)

The compatibility criteria in Zone 5 are the same as those in Zone 2.

SP-3 HAZARDOUS USES

Hazardous uses, facilities involving the manufacture, processing, or storage of hazardous materials, can pose serious risks to the public in case of aircraft accidents. Hazardous materials of particular concern in this ALUCP, and which are covered by the safety compatibility criteria in Table IV-2, are the following:

A. Aboveground fuel storage — This includes storage tanks with capacities greater than 10,000 gallons of any substance containing at least 5 percent petroleum.⁹ Project sponsors must provide evidence of compliance with all applicable regulations prior to the issuance of development permits.

B. Facilities where toxic substances are manufactured, processed or stored — Proposed land use projects involving the manufacture or storage of toxic substances may be allowed if the

⁹ State of California, California Health and Safety Code, Section 25270 (Aboveground Petroleum Storage Act).

amounts of the substances do not exceed the threshold planning quantities for hazardous and extremely hazardous substances specified by the EPA.¹⁰

C. Explosives and fireworks manufacturing and storage — Proposed land use projects involving the manufacture or storage of explosive materials may be allowed in safety zones only in compliance with the applicable regulations of the California Division of Occupational Safety and Health (Section 5252, Table EX-1). Project sponsors must provide evidence of compliance with applicable state regulations prior to the issuance of any development permits.¹¹

D. Medical and biological research facilities handling highly toxic or infectious agents — These facilities are classified by “Biosafety Levels.”¹² Biosafety Level 1 does not involve hazardous materials and is not subject to the restrictions on hazardous uses in Table IV-2. Definitions of the other three biosafety levels are quoted from *Biosafety in Microbiological and Biomedical Laboratories*, below.¹³

- a. Biosafety Level 2 practices, equipment, and facility design and construction are applicable to clinical, diagnostic, teaching, and other laboratories in which work is done with the broad spectrum of indigenous moderate-risk agents that are present in the community and associated with human disease of varying severity.
- b. Biosafety Level 3 practices, safety equipment, and facility design and construction are applicable to clinical, diagnostic, teaching, research, or production facilities in which work is done with indigenous or exotic agents with a potential for respiratory transmission, and which may cause serious and potentially lethal infection.
- c. Biosafety Level 4 practices, safety equipment, and facility design and construction are applicable for work with dangerous and exotic agents that pose a high individual risk of life-threatening disease, which may be transmitted via the aerosol route and for which there is no available vaccine or therapy.

¹⁰ Title 40 Code of Federal Regulations Part 355, Subpart D, Appendices A & B.

¹¹ California Code of Regulations, Title 8, Subchapter 7 *General Industry Safety Orders*, Group 18 *Explosives and Pyrotechnics*, Article 114 *Storage of Explosives*.

¹² *Biosafety in Microbiological and Biomedical Laboratories*, 5th Edition, 2009, published by the U.S. Department of Health and Human Services in concert with the Public Health Service, Centers for Disease Control and Prevention, and National Institutes of Health, or any successor publication.

¹³ *Biosafety in Microbiological and Biomedical Laboratories*, 5th Edition, 2009, published by the U.S. Department of Health and Human Services in concert with the Public Health Service, Centers for Disease Control and Prevention, and National Institutes of Health, pp. 25-26.

4.5 Airspace Protection

The compatibility of proposed land uses with respect to airspace protection shall be evaluated in accordance with the policies set forth in this section. These policies are established with a twofold purpose:

1. To protect the public health, safety, and welfare by minimizing the public's exposure to potential safety hazards that could be created through the construction of tall structures.
2. To protect the public interest in providing for the orderly development of SFO by ensuring that new development in the Airport environs avoids compromising the airspace in the Airport vicinity. This avoids the degradation in the safety, utility, efficiency, and air service capability of the Airport that could be caused by the attendant need to raise visibility minimums, or to cancel, restrict, or redesign flight procedures.

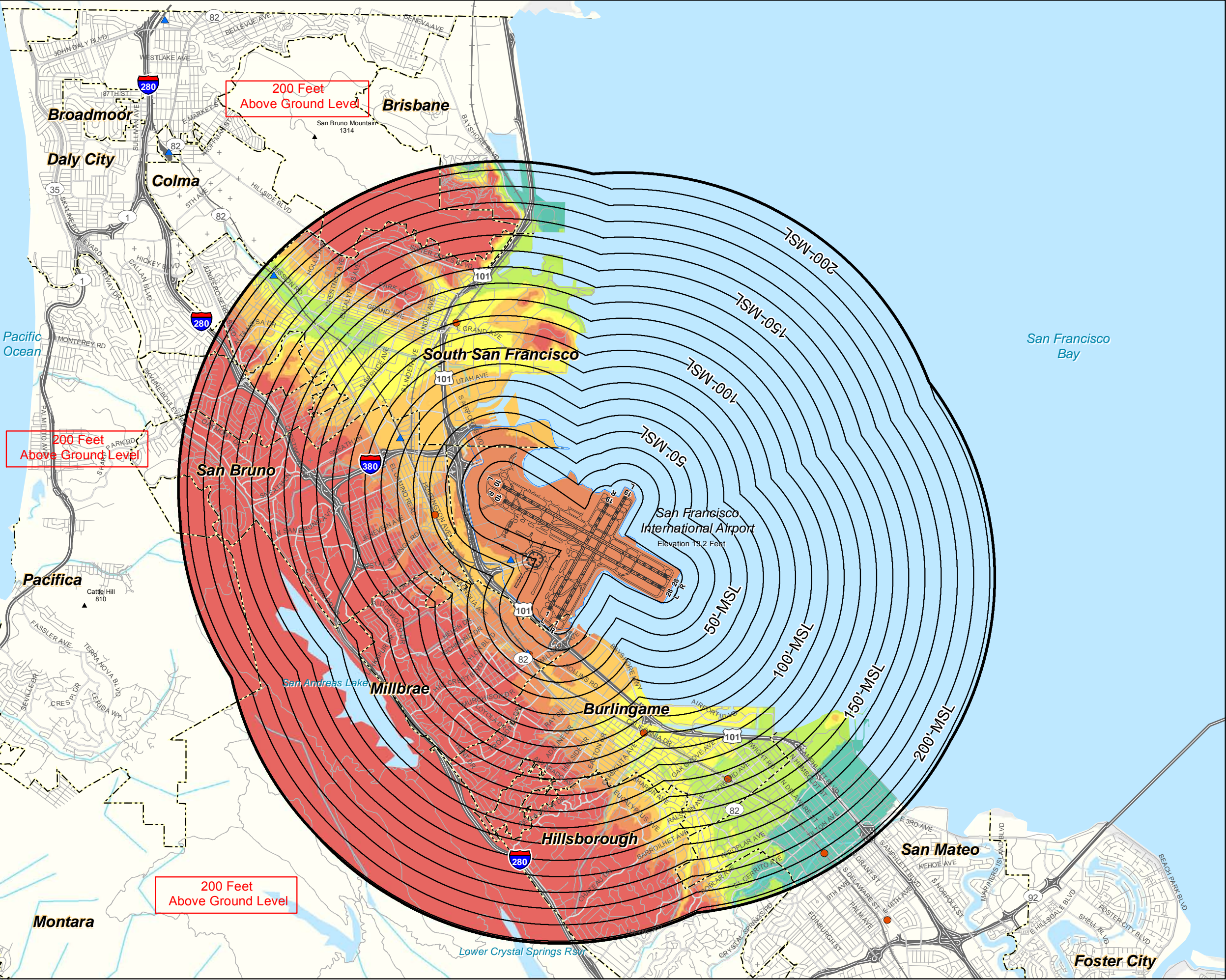
4.5.1 FEDERAL REGULATIONS REGARDING TALL STRUCTURES

14 Code of Federal Regulations (CFR) Part 77, *Safe, Efficient Use and Preservation of the Navigable Airspace*, provides regulations governing the FAA's review of proposed construction exceeding certain height limits, defines airspace obstruction criteria, and provides for FAA aeronautical studies of proposed construction. **Appendix F** describes the FAA airspace review process and the extent of FAA authority related to airspace protection.

4.5.2 PART 77, SUBPART B, NOTIFICATION PROCESS

Federal regulations require any person proposing to build a new structure or alter an existing structure with a height that would exceed the elevations described in CFR Part 77, Subpart B, Section 77.9, to prepare an FAA Form 7460-1, *Notice of Proposed Construction or Alteration*, and submit the notice to the FAA. The regulations apply to buildings and other structures or portions of structures, such as mechanical equipment, flag poles, and other projections that may exceed the aforementioned elevations.

Exhibit IV-10 depicts the approximate elevations at which the 14 CFR Part 77 notification requirements would be triggered; see **Exhibit IV-11** for a close-up view of the northern half and **Exhibit IV-12** for a close-up view of the southern half of the area. These exhibits are provided for informational purposes only. Official determinations of the areas and elevations within which the federal notification requirements apply are subject to the authority of the FAA.



FAA NOTIFICATION REQUIREMENTS

A structure proponent must file FAA Form 7460-1, Notice of Proposed Construction or Alteration, for any proposed construction or alteration that meets any of the following Notification Criteria described in 14 CFR Part 77.9:

§77.9(a) - A height more than 200 feet above ground level (AGL) at its site;

§77.9(b) - Within 20,000 feet of a runway more than 3,200 feet in length, and exceeding a 100:1 slope imaginary surface (i.e., a surface rising 1 foot vertically for every 100 feet horizontally) from the nearest point of the nearest runway. The 100:1 surface is shown as follows:

20,000 Feet Limit From Nearest Runway
100 Elevation Above Mean Sea Level

Heights of 100:1 Surface Above Ground (AGL)

- Terrain Penetrations of Airspace Surface
- Less than 30
- 30-65
- 65-100
- 100-150
- 150-200
- 200 and more

§77.9(c) - Roadways, railroads, and waterways are evaluated based on heights above surface providing for vehicles; by specified amounts or by the height of the highest mobile object normally traversing the transportation corridor;

§77.9(d) - Any construction or alteration on any public-use or military airport (or heliport).

Structure proponents or their representatives may file via traditional paper forms via US mail, or online at the FAA's OE/AAA website, <http://oeaaa.faa.gov>

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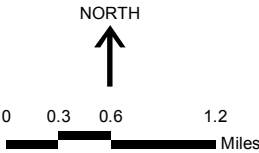
- BART Station
- CALTRAIN Station
- Municipal Boundary
- Railroad
- Freeway
- Road

Note:

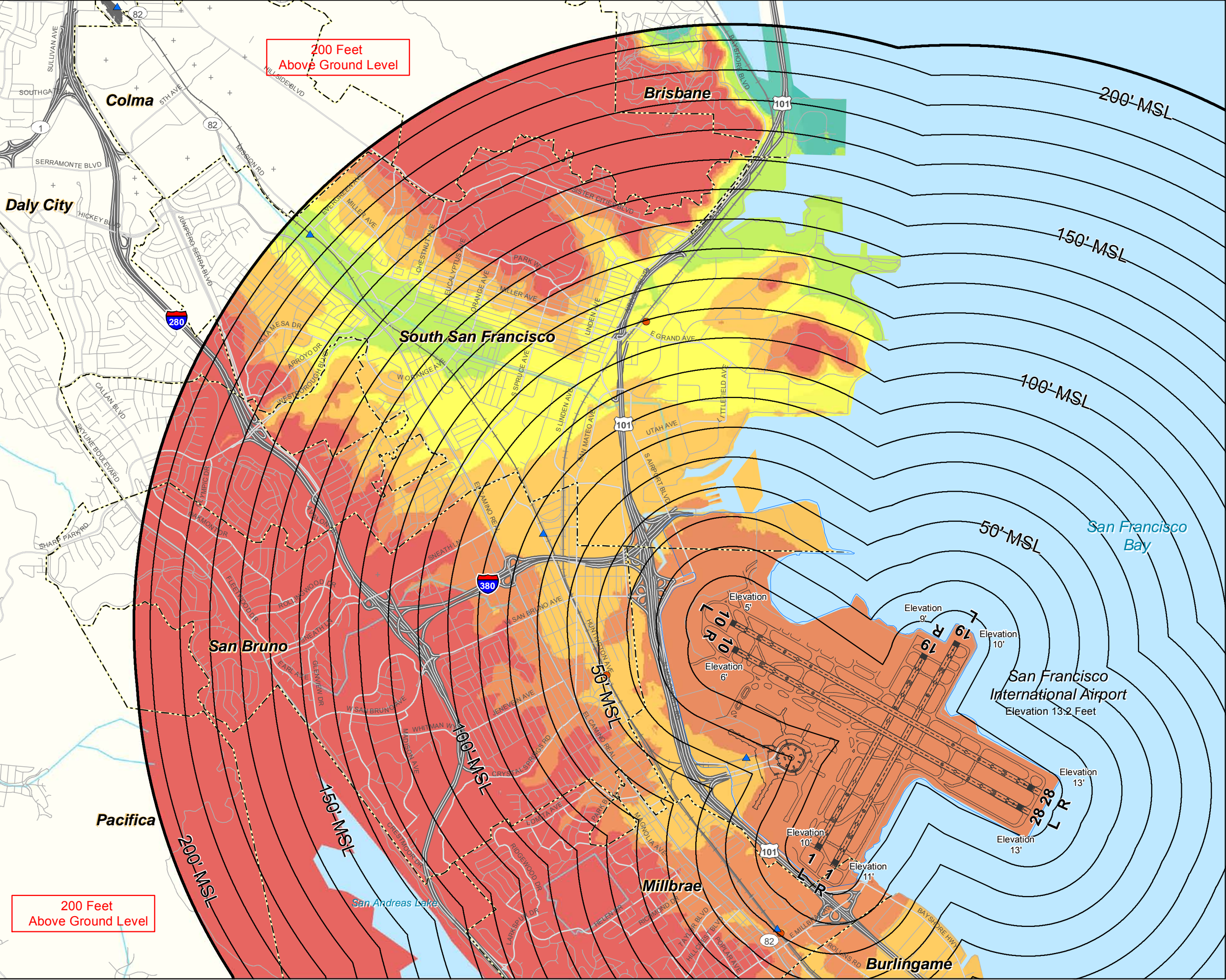
Per CFR Part 77, developers proposing structures taller than the indicated elevations must file Form 7460-1 with the FAA at least 30 days before the proposed construction. However, due to local requirements for a favorable FAA determination as a contingency for project approval, it is advisable to file the Form 7460-1 as soon as possible because the FAA can take several months to undertake aeronautical reviews.

Source:

Ricondo & Associates, Inc. and Jacobs Consultancy, based on 14 CFR Part 77, Subpart B, Section 77.9.



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— 20,000 Feet Limit From Nearest Runway

— 100 — Elevation Above Mean Sea Level

Heights of 100:1 Surface Above Ground (AGL)

■ Terrain Penetrations of Airspace Surface

■ Less than 30

■ 30-65

■ 65-100

■ 100-150

■ 150-200

■ 200 and more

§77.9(c) - Roadways, railroads, and waterways are evaluated based on heights above surface providing for vehicles; by specified amounts or by the height of the highest mobile object normally traversing the transportation corridor;

§77.9(d) - Any construction or alteration on any public-use or military airport (or heliport).

Structure proponents or their representatives may file via traditional paper forms via US mail, or online at the FAA's OE/AAA website, <http://oeaaa.faa.gov>

LEGEND

▲ BART Station

● CALTRAIN Station

--- Municipal Boundary

— Railroad

== Freeway

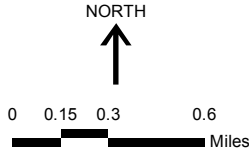
— Road

Note:

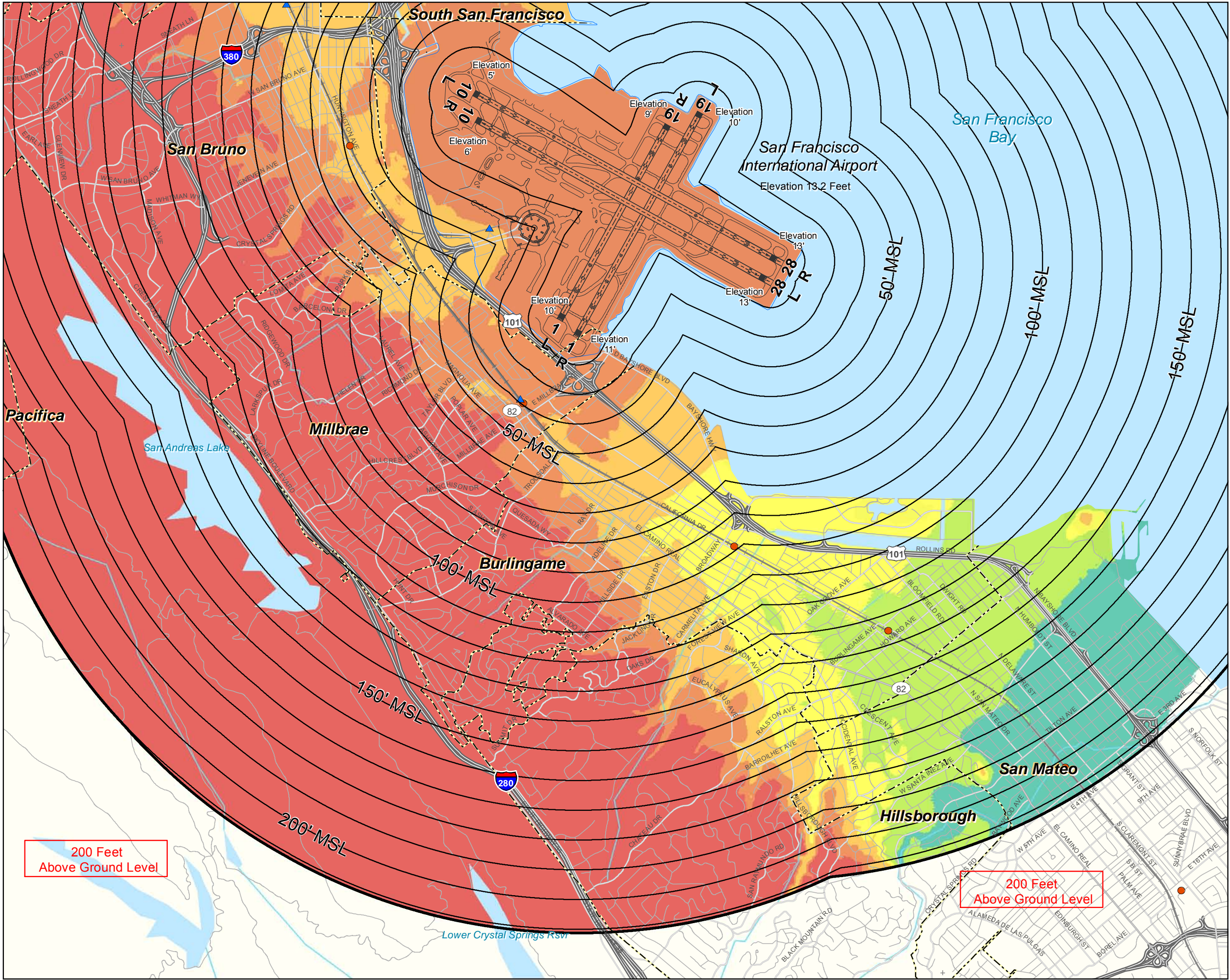
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Source:

Ricondo & Associates, Inc. and Jacobs Consultancy, based on 14 CFR Part 77, Subpart B, Section 77.9.



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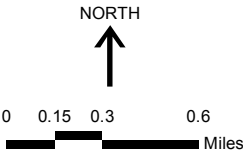
- BART Station
- CALTRAIN Station
- Municipal Boundary
- Railroad
- Freeway
- Road

Note:

Per 14 CFR Part 77, developers proposing structures taller than the indicated elevations must file Form 7460-1 with the FAA at least 30 days before the proposed construction. However, due to local requirements for a favorable FAA determination as a contingency for project approval, it is advisable to file the Form 7460-1 as soon as possible because the FAA can take several months to undertake aeronautical reviews.

Source:

Ricondo & Associates, Inc. and Jacobs Consultancy, based on 14 CFR Part 77, Subpart B, Section 77.9.



200 Feet
Above Ground Level

200 Feet
Above Ground Level

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4.5.3 AIRSPACE MAPPING

Part 77, Subpart C, establishes obstruction standards for the airspace around airports including approach zones, conical zones, transitional zones, and horizontal zones known as “imaginary surfaces.” **Exhibit IV-13** depicts the Part 77 Civil Airport Imaginary Surfaces at SFO. The imaginary surfaces rise from the primary surface, which is at ground level immediately around the runways. The surfaces rise gradually along the approach slopes associated with each runway end and somewhat more steeply off the sides of the runways. The FAA considers any objects penetrating these surfaces, whether buildings, trees or vehicles travelling on roads and railroads, as obstructions to air navigation.

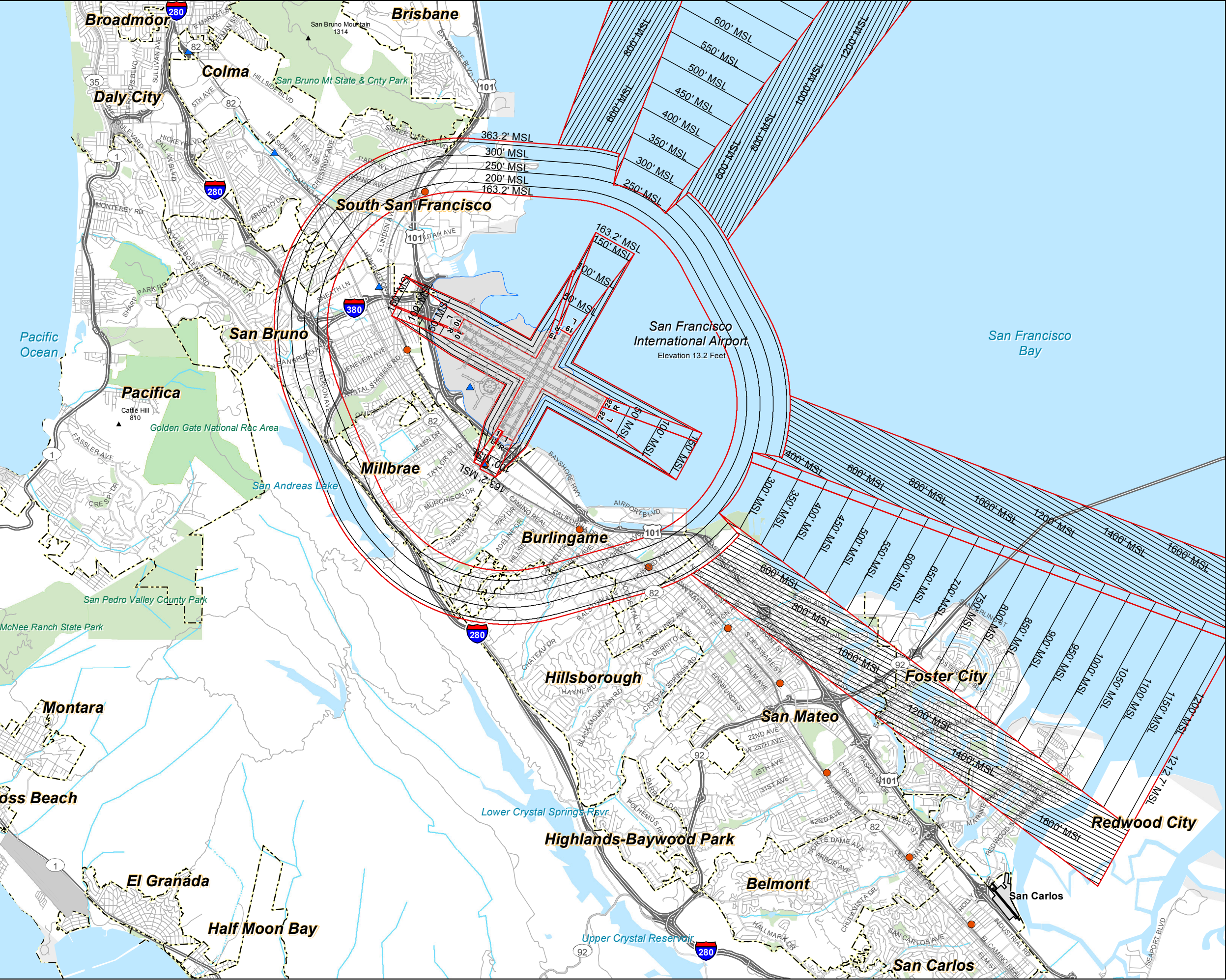
Close-up views of the north and south sides of the Part 77 surfaces are provided in **Exhibit IV-14** and **Exhibit IV-15**, respectively. Additionally, **Exhibit IV-16** provides an illustration of the outer approach and transitional surfaces located on the southeast side of the Part 77 surfaces.

Together with its tenant airlines, SFO has undertaken a mapping effort to illustrate the critical aeronautical surfaces that protect the airspace required for multiple types of flight procedures such as those typically factored into FAA aeronautical studies, as shown on **Exhibit IV-17** and **Exhibit IV-18**. These aeronautical surfaces include those established in accordance with FAA Order 8260.3B, *U.S. Standard for Terminal Instrument Procedures (TERPS)*, and a surface representing the airspace required for One-Engine Inoperative (OEI) departures from Runway 28L (to the west through the San Bruno Gap).¹⁴ The exhibits depict the lowest elevations from the combination of the OEI procedure surface and all TERPS surfaces. **These surfaces indicate the maximum feasible height at which structures can be considered compatible with Airport operations.**

Exhibit IV-19, which is provided for information purposes only, depicts a profile view of the lowest critical airspace surfaces along the extended centerline of Runway 10L-28R – the TERPS Obstacle Departure Procedure (ODP) surface, representing standard all-engines departures, and the approximate OEI surface developed by SFO through independent study in consultation with the airlines serving SFO. The exhibit also shows the terrain elevation beneath the airspace surfaces and various aircraft approach and departure profiles, based on varying operating assumptions. The exhibit illustrates a fundamental principle related to the design of airspace protection surfaces. The surfaces are always designed below the actual aircraft flight profile which they are designed to protect, thus providing a margin of safety. Note that the ODP climb profile is above the ODP airspace surface, and the OEI climb profile is above the OEI airspace surface.

¹⁴ See Appendix F, Section F.3.2 for a discussion of one-engine inoperative procedures.

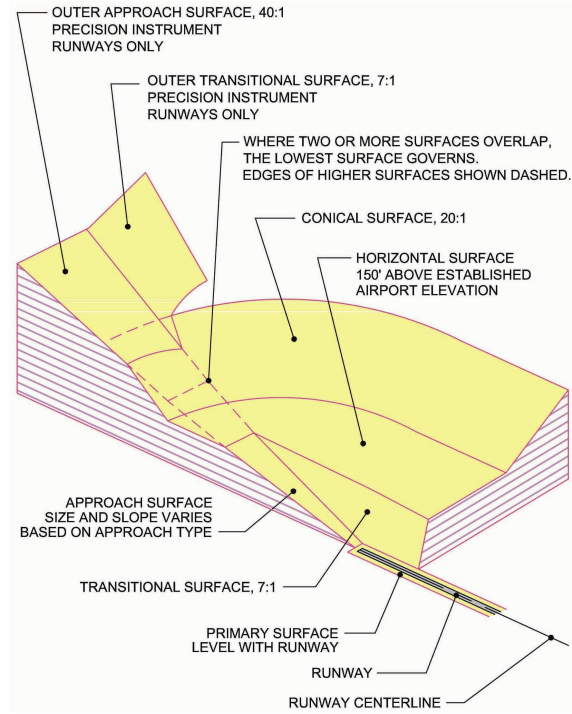
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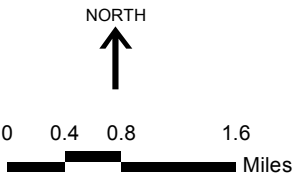
- 14 CFR Part 77 Civil Airport Imaginary Surfaces
- 100' MSL Elevation Contour, feet AMSL
- BART Stations
- CALTRAIN Stations
- Regional Park or Recreation Area
- Municipal Boundary
- Railroads
- Freeways
- Roads

Isometric Drawing of 14 CFR Part 77, Section 77.19 Civil Airport Imaginary Surfaces

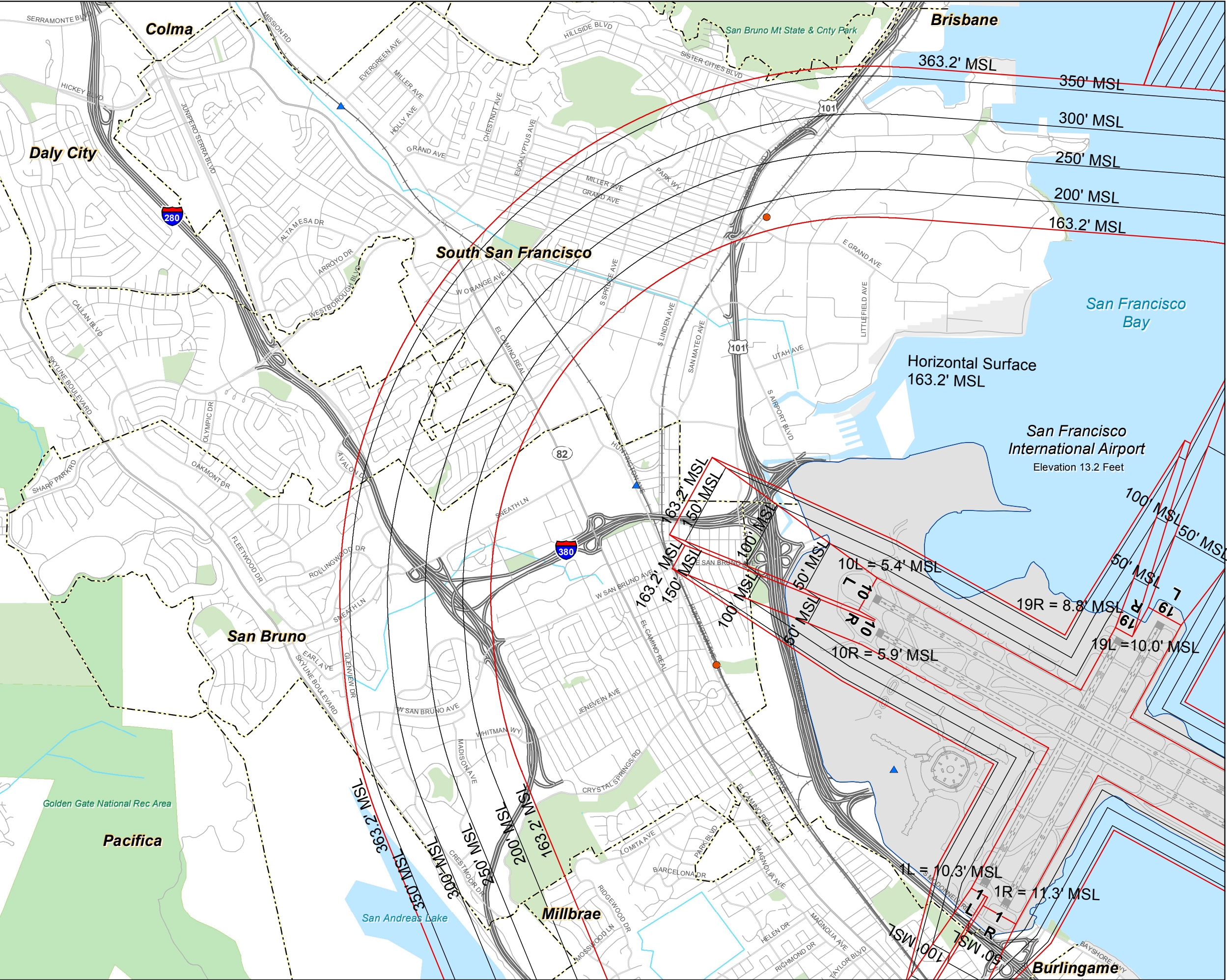


Sources:

14 CFR Part 77 Surfaces: City and County of San Francisco, Ricondo & Associates, Inc. 2010.



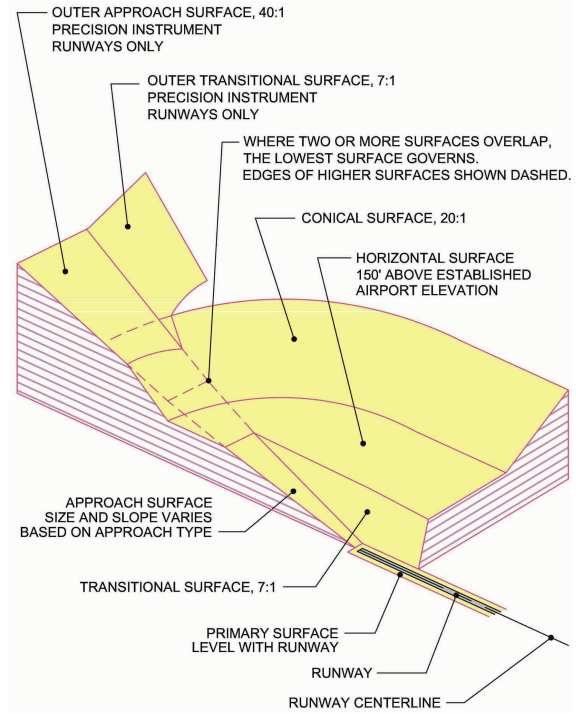
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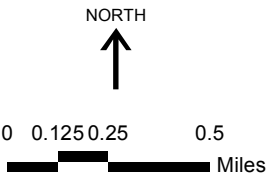
- 14 CFR Part 77 Civil Airport Imaginary Surfaces
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Isometric Drawing of 14 CFR Part 77, Section 77.19 Civil Airport Imaginary Surfaces

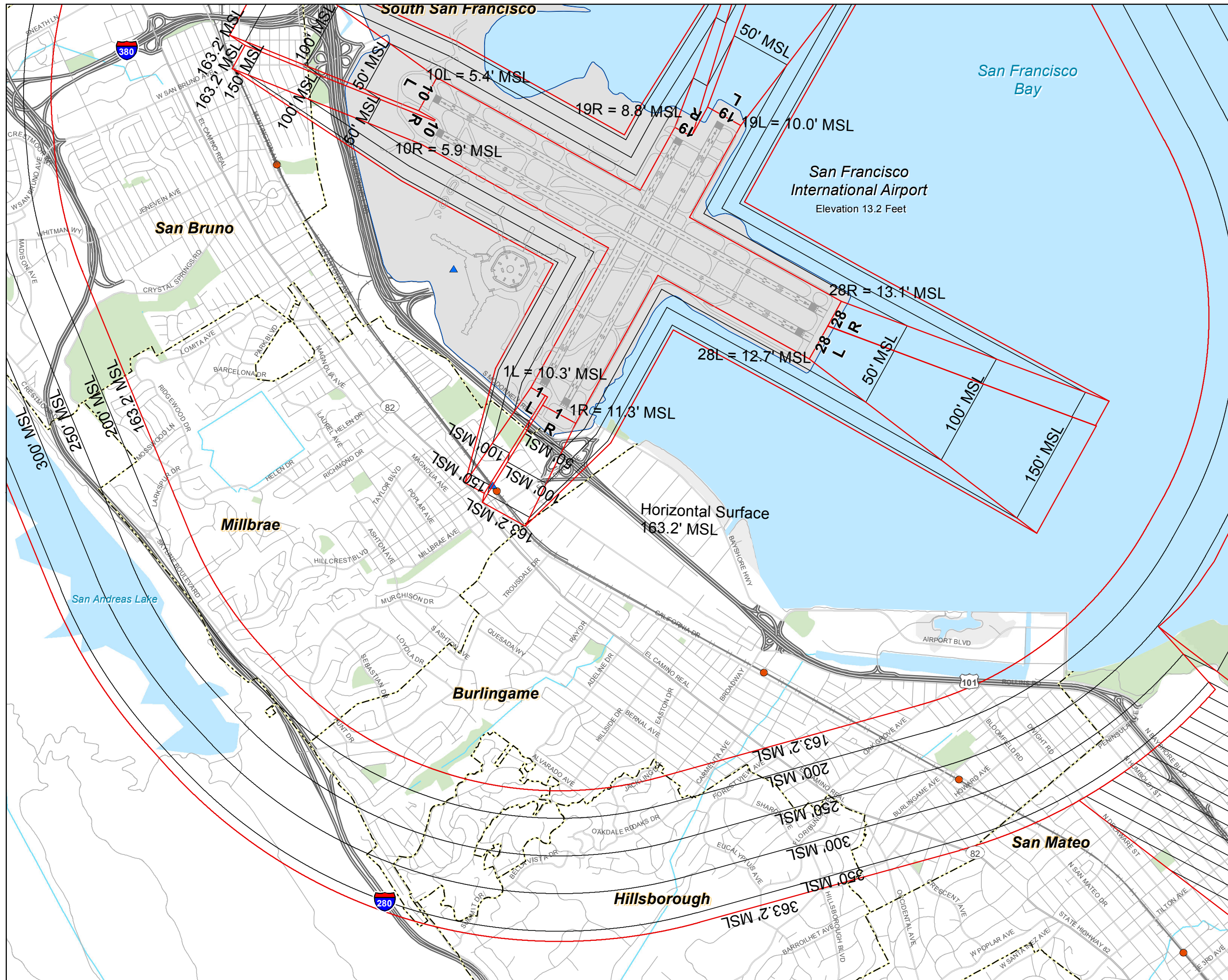


Sources:

14 CFR Part 77 Surfaces: City and County of San Francisco, Ricondo & Associates, Inc., 2010



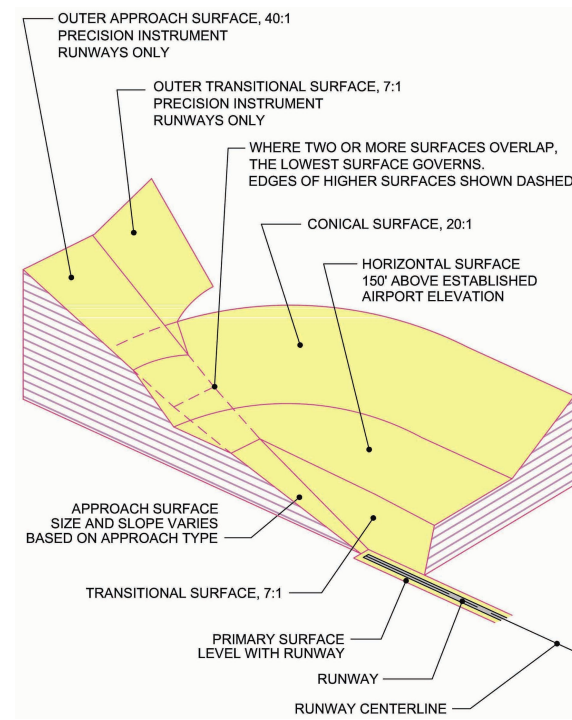
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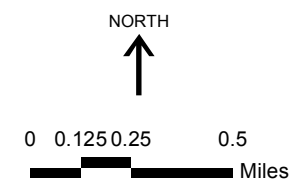
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Isometric Drawing of 14 CFR Part 77, Section 77.19 Civil Airport Imaginary Surfaces

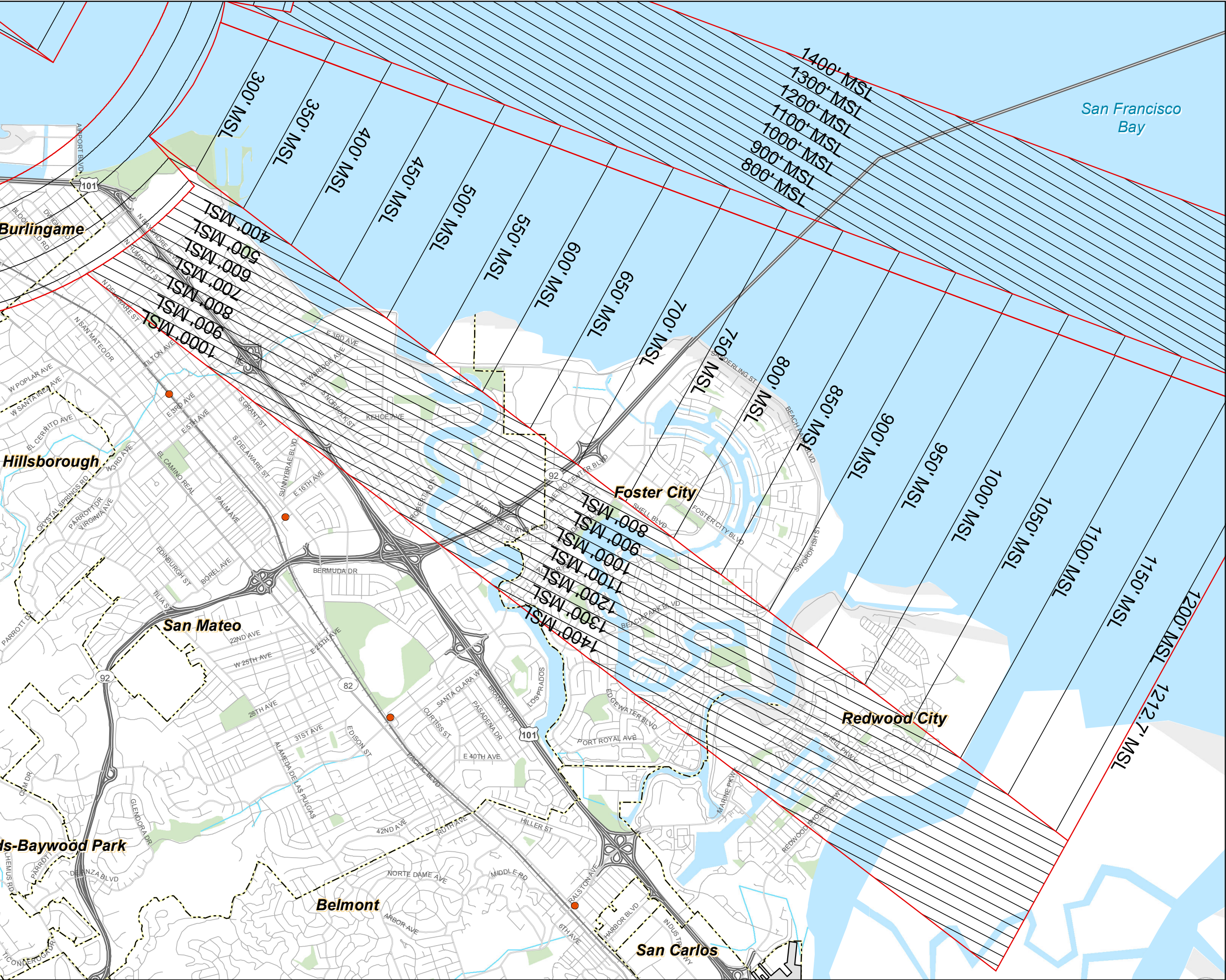


Sources:

14 CFR Part 77 Surfaces: City and County of San Francisco, Ricondo & Associates, Inc., 2010



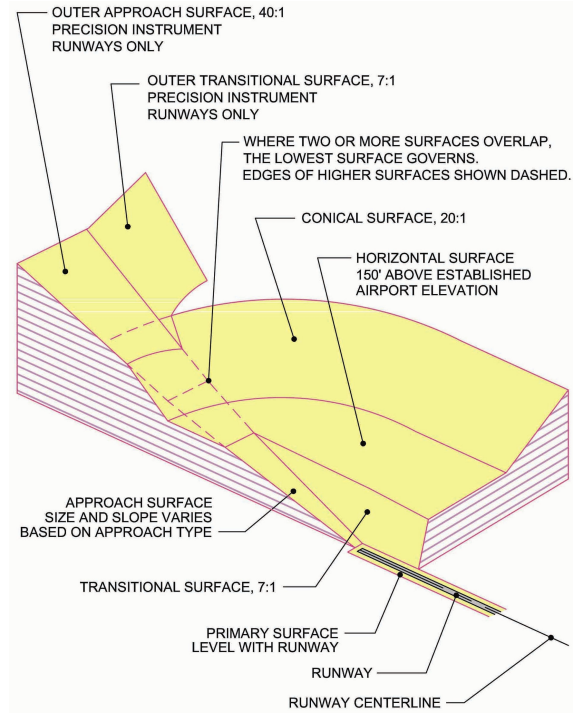
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LEGEND

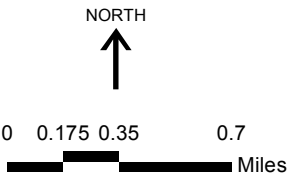
- 14 CFR Part 77 Civil Airport Imaginary Surfaces
- 100' MSL Elevation Contour, feet AMSL
- BART Stations
- CALTRAIN Stations
- Regional Park or Recreation Area
- Municipal Boundary
- Railroads
- Freeways
- Roads

Isometric Drawing of 14 CFR Part 77, Section 77.19 Civil Airport Imaginary Surfaces

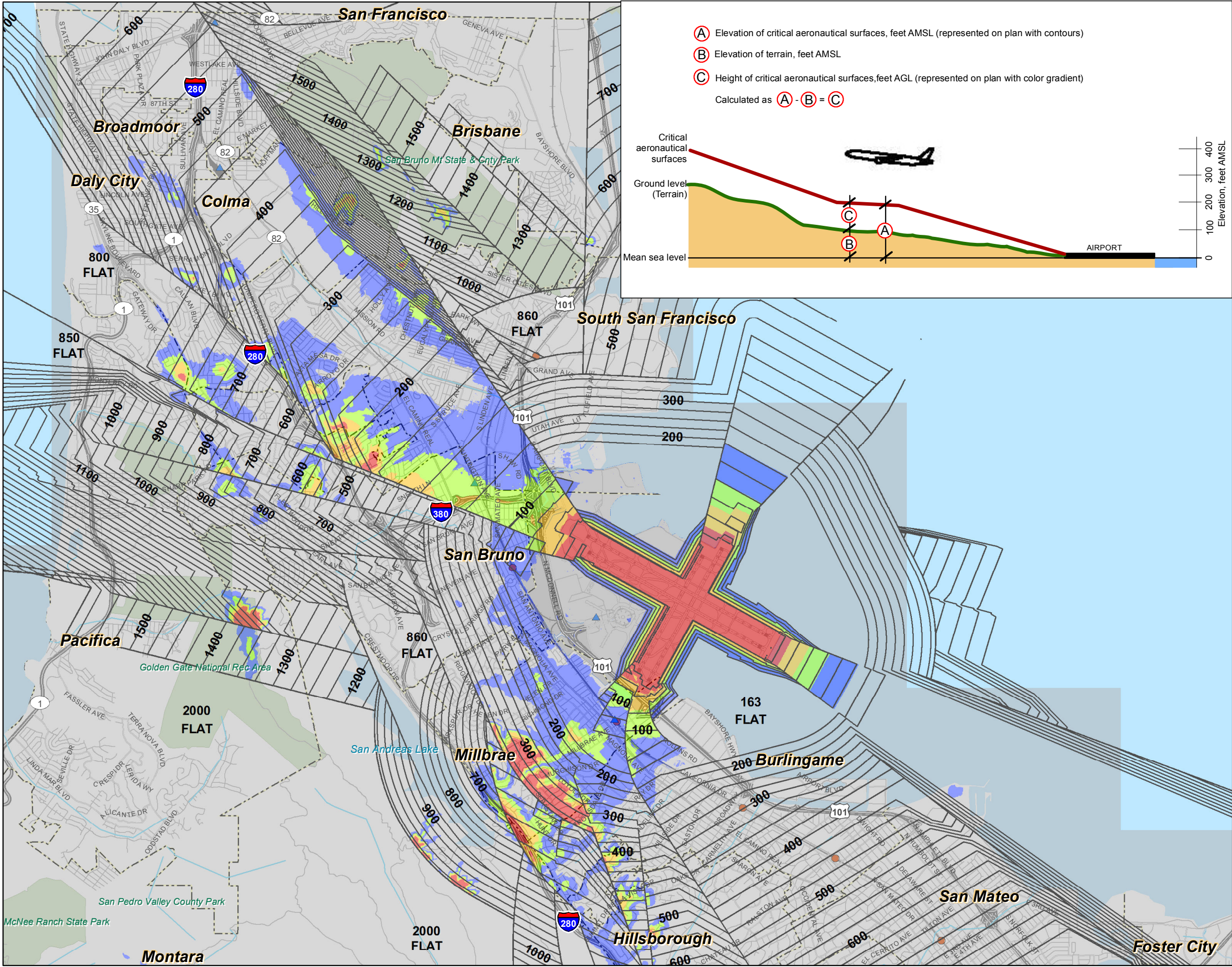


Sources:

14 CFR Part 77 Surfaces: City and County of San Francisco, Ricondo & Associates, Inc., 2010



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LEGEND

(A) — 100 — Elevation of critical aeronautical surfaces, feet Above Mean Sea Level (AMSL), North American Vertical Datum of 1988 (NAVD88)

(C) **Height of Critical Aeronautical Surfaces, Feet Above Ground Level (AGL)**

- 35 and lower
- 35 - 65
- 65 - 100
- 100 - 150
- 150 and more

— Airport Property

▲ BART Station

● CALTRAIN Station

Regional Park or Recreation Area

--- Municipal Boundary

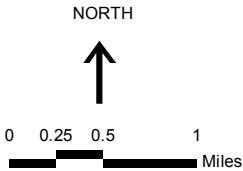
— Railroad

— Freeway

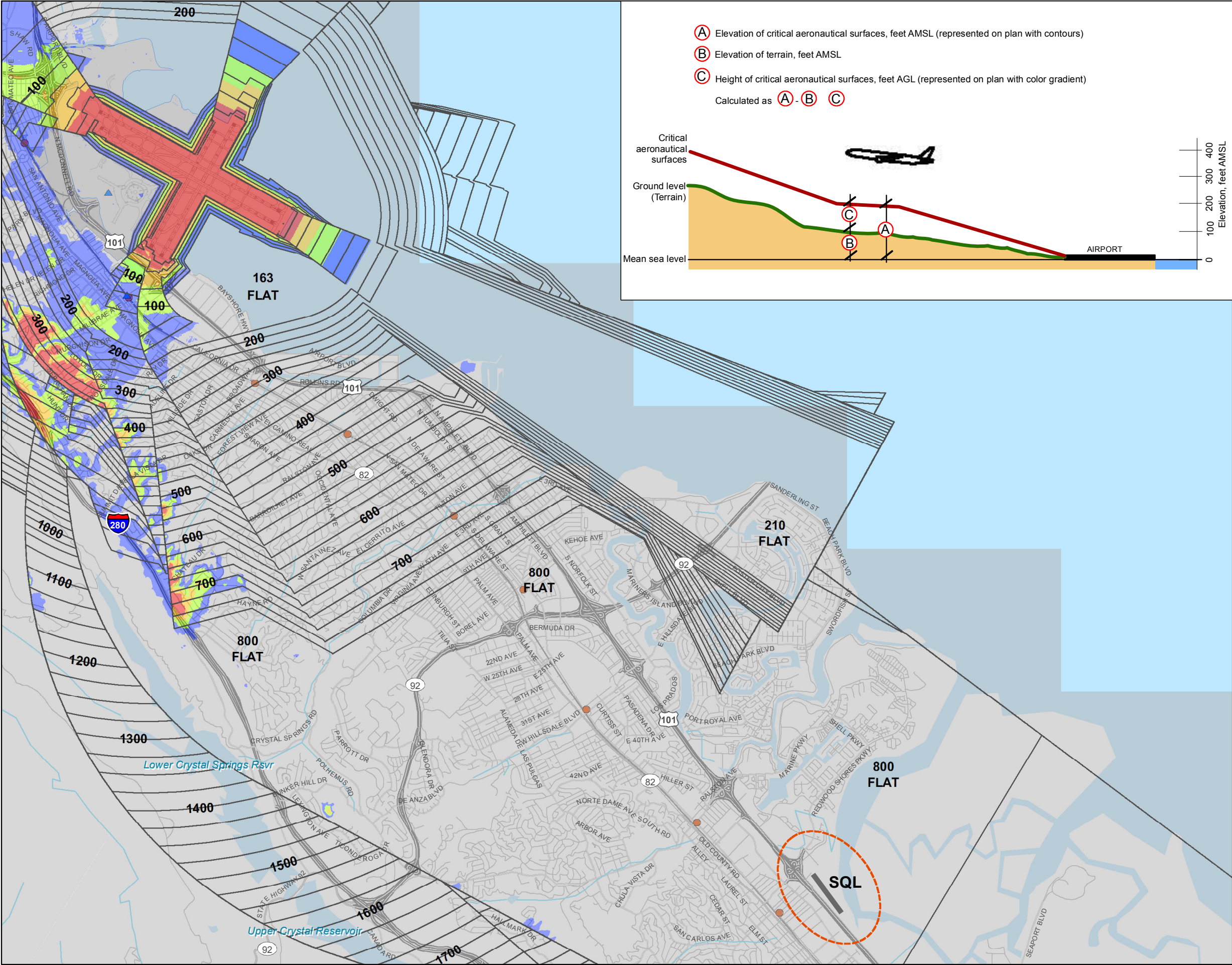
— Road

- Notes:**
1. This map is intended for informational and conceptual planning purposes, generally representing the aeronautical surfaces considered most critical by San Francisco International Airport (SFO) and its constituent airlines. It does not represent actual survey data, nor should it be used as the sole source of information regarding compatibility with airspace clearance requirements in the development of data for an FAA Form 7460-1, Notice of Proposed Construction or Alteration. SFO does not certify its accuracy, information, or title to the properties contained in this plan. SFO does make any warrants of any kind, express or implied, in fact or by law, with respect to boundaries, easements, restrictions, claims, overlaps, or other encumbrances affecting such properties.
2. This map does not replace the FAA's obstruction evaluation / airport airspace analysis (OE/AAA) review process. Proposing construction at elevations and heights that are lower than the critical aeronautical surfaces shown on this map, (a) does not relieve the construction sponsor of the obligation to file an FAA Form 7460-1, and (b) does not ensure that the proposal will be acceptable to the FAA, SFO, air carriers, or other agencies or stakeholders. SFO, San Mateo County, and local authorities having jurisdiction reserve the right to re-assess, review, and seek modifications to projects that may be consistent with this critical aeronautical surfaces map but that through the FAA OE/AAA process are found to have unexpected impacts to the safety or efficiency of operations at SFO.

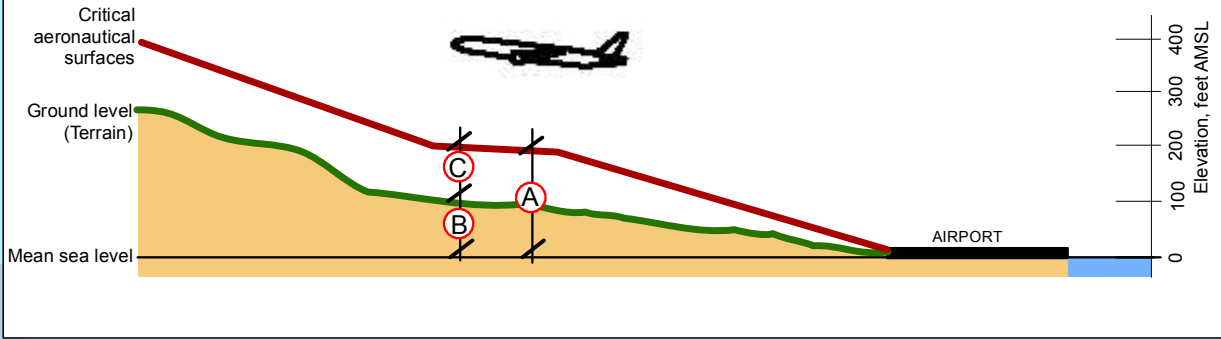
Sources: San Francisco International Airport, Jacobs Consultancy, and Planning Technology Inc., 2009



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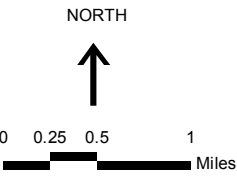
- (A) Elevation of critical aeronautical surfaces, feet AMSL (represented on plan with contours)
(B) Elevation of terrain, feet AMSL
(C) Height of critical aeronautical surfaces, feet AGL (represented on plan with color gradient)
Calculated as (A) - (B) (C)



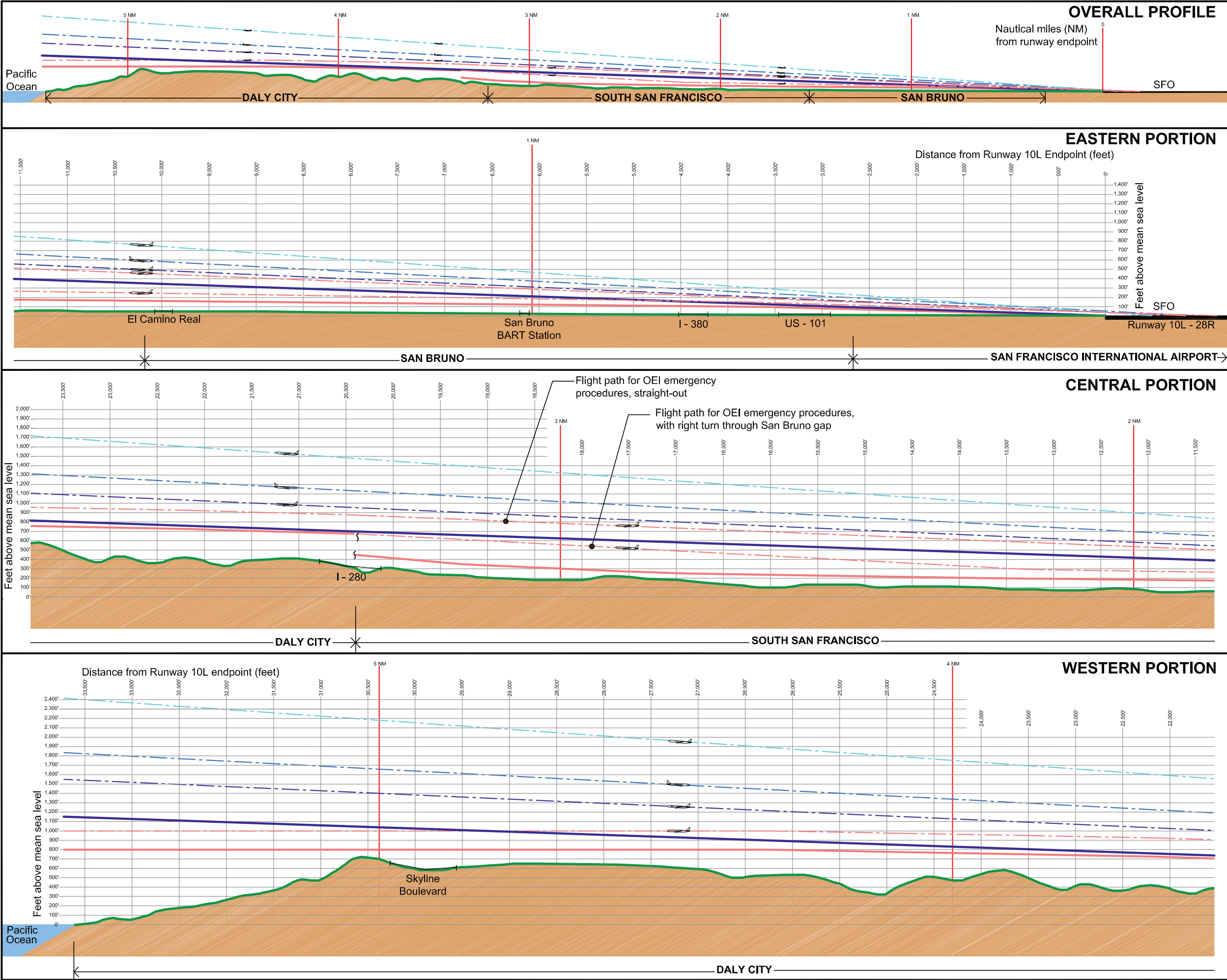
- LEGEND**
- (A) — 100 — Elevation of critical aeronautical surfaces, feet Above Mean Sea Level (AMSL), North American Vertical Datum of 1988 (NAVD88)
- (C) **Height of Critical Aeronautical Surfaces, Feet Above Ground Level (AGL)**
- 35 and lower
 - 35 - 65
 - 65 - 100
 - 100 - 150
 - 150 and more
- Legend symbols:
- Airport Property
 - BART Station
 - CALTRAIN Station
 - Regional Park or Recreation Area
 - Municipal Boundary
 - Railroad
 - Freeway
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- Notes:**
1. This map is intended for informational and conceptual planning purposes, generally representing the aeronautical surfaces considered most critical by San Francisco International Airport (SFO) and its constituent airlines. It does not represent actual survey data, nor should it be used as the sole source of information regarding compatibility with airspace clearance requirements in the development of data for an FAA Form 7460-1, Notice of Proposed Construction or Alteration. SFO does not certify its accuracy, information, or title to the properties contained in this plan. SFO does make any warrants of any kind, express or implied, in fact or by law, with respect to boundaries, easements, restrictions, claims, overlaps, or other encumbrances affecting such properties.
 2. This map does not replace the FAA's obstruction evaluation / airport airspace analysis (OE/AAA) review process. Proposing construction at elevations and heights that are lower than the critical aeronautical surfaces shown on this map, (a) does not relieve the construction sponsor of the obligation to file an FAA Form 7460-1, and (b) does not ensure that the proposal will be acceptable to the FAA, SFO, air carriers, or other agencies or stakeholders. SFO, San Mateo County, and local authorities having jurisdiction reserve the right to re-assess, review, and seek modifications to projects that may be consistent with this critical aeronautical surfaces map but that through the FAA OE/AAA process are found to have unexpected impacts to the safety or efficiency of operations at SFO.

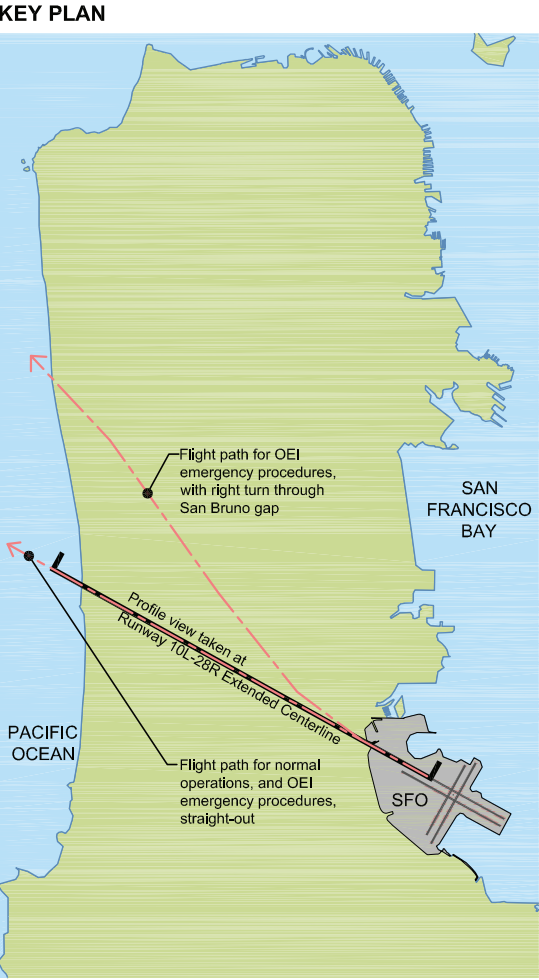
Sources: San Francisco International Airport, Jacobs Consultancy, and Planning Technology Inc., 2009



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- LEGEND**
- Terrain Profile
 - One Engine Inoperative (OEI) emergency flight path (approximate)
 - OEI airspace protection surface
- Representative Standard Flight Procedures**
- Runway 28R departure: 270 feet per nautical mile minimum climb gradient, as specified in Obstacle Departure Procedure (ODP)
 - Obstacle Clearance Surface (OCS) for ODP
 - Runway 28R departure: 425 feet per nautical mile minimum climb gradient, as specified in several Standard Instrument Departure (SID) procedures
 - Note: Aircraft on departure usually climb at a higher rate than the specified minimum
 - Runway 10L approach: 3.0° glidepath angle
 - Representative at-scale aircraft - Boeing 777-300



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4.5.4 AIRSPACE PROTECTION POLICIES

The following airspace protection policies (AP) shall apply to the ~~CLUP~~ALUCP.

AP-1 COMPLIANCE WITH 14 CFR PART 77, SUBPART B, NOTICE OF PROPOSED CONSTRUCTION OR ALTERATION

AP-1.1 Local Government Responsibility to Notify Project Sponsors

Local governments have the responsibility to notify sponsors of proposed projects at the earliest opportunity to file Form 7460-1, *Notice of Proposed Construction or Alteration*, with the FAA for any proposed project that would exceed the FAA notification heights, as shown approximately on Exhibit IV-10. Under Federal law, it is the responsibility of the project sponsor to comply with all notification and other requirements described in 14 CFR Part 77.

AP-1.2 FAA Aeronautical Study Findings Required ~~Prior To~~Before Processing Development Application

The sponsor of a proposed project that would exceed the FAA notification heights, as shown approximately on Exhibit IV-10, shall present to the local government permitting agency with his or her application for a development permit, a copy of the findings of the FAA's aeronautical study, or evidence demonstrating that he or she is exempt from having to file an FAA Form 7460-1. It is the responsibility of the local agency to consider the FAA determination study findings as part of its review and decision on the proposed project.

AP-2 COMPLIANCE WITH FINDINGS OF FAA AERONAUTICAL STUDIES

Project sponsors shall be required to comply with the findings of FAA aeronautical studies with respect to any recommended alterations in the building design and height and any recommended marking and lighting of their structures for their proposed projects to be deemed consistent with this ~~CLUP~~ALUCP.

AP-3 MAXIMUM COMPATIBLE BUILDING HEIGHT

In order to be deemed consistent with the ~~CLUP~~ALUCP, the maximum height of a new building must be the lower of (1) the height shown on the SFO critical aeronautical surfaces map (Exhibits IV-17 and IV-18), or (2) the maximum height determined not to be a "hazard to air navigation" by the FAA in an aeronautical study prepared pursuant to the filing of Form 7460-1.

For the vast majority of parcels, the height limits established in local zoning ordinances are lower than the critical airspace surfaces. In those cases, the zoning district height regulations will control. Compliance with the zoning district height and the SFO critical aeronautical surfaces map, however, does not relieve the construction sponsor of the obligation to file an FAA Form 7460-1 *Notice of Proposed Construction or Alteration*, if required, and to comply with the determinations resulting from the FAA's aeronautical study.

For a project to be consistent with this ~~CLUP~~ALUCP, no local agency development permits shall be issued for any proposed structure that would penetrate the aeronautical surfaces shown on Exhibits IV-17 and IV-18 or the construction of which **has not** received a favorable determination from the FAA, or

which would cause the FAA to increase the minimum visibility requirements for any instrument approach or departure procedure at the Airport.

AP-4 OTHER FLIGHT HAZARDS SHALL BE PROHIBITED

Proposed land uses with characteristics actions that include land uses that may cause visual, electronic, or wildlife hazards, particularly bird strike hazards, to aircraft taking off or landing at the Airport or in flight shall be prohibited in Area B. They may be permitted only if the uses are consistent with FAA rules and regulations. Proof of consistency with FAA rules and regulations and with any performance standards cited below must be provided to the Airport Land Use Commission (C/CAG Board ~~of Directors~~) by the sponsor of the proposed land use action.

Specific characteristics that may create hazards to aircraft in flight and which shall be prohibited include:

- (a) Sources of glare, such as highly reflective buildings or building features, or bright lights, including search lights or laser displays, which would interfere with the vision of pilots making approaches to the Airport.;
- (b) Distracting lights that that could be mistaken by pilots on approach to the Airport for airport identification lighting, runway edge lighting, runway end identification lighting, or runway approach lighting.;
- (c) Sources of dust, smoke, or water vapor that may impair the vision of pilots making approaches to the Airport.;
- (d) Sources of electrical interference with aircraft or air traffic control communications or navigation equipment, including radar.;
- (e) Land uses that, as a regular byproduct of their operations, produce Sources of thermal plumes with the potential to rise high enough and at sufficient velocities to interfere with the control of aircraft in flight. Upward velocities of 4.3 meters (14.1 feet) per second at altitudes above 200 feet above the ground shall be considered as potentially interfering with the control of aircraft in flight.¹⁵;
- (f) Any use that creates an increased attraction for wildlife, particularly large flocks of birds, that is inconsistent with FAA rules and regulations, including, but not limited to, FAA Order 5200.5A, *Waste Disposal Sites On or Near Airports*, FAA Advisory Circular 150/5200-33B, *Hazardous Wildlife Attractants On or Near Airports*, and any successor or replacement orders or advisory circulars. Exceptions to this policy are acceptable for wetlands or other environmental mitigation projects required by ordinance, statute, court order, or Record of Decision issued by a federal agency under the National Environmental Policy Act.

¹⁵ This is a threshold established by the California Energy Commission in its review of power plant licensing applications. See *Blythe Solar Power Project: Supplemental Staff Assessment, Part 2*, CEC-700-2010-004-REVI-SUP-PT2, July 2010. California Energy Commission. Docket Number 09-AFC-6, p. 25. This criterion is based on guidance established by the Australian Government Civil Aviation Authority (Advisory Circular AC 139-05(0), June 2004). The FAA's Airport Obstructions Standards Committee (AOSC) is studying this matter but has not yet issued specific guidance.

4.5.5 iALP AIRSPACE TOOL

In consultation with C/CAG, SFO developed the iALP Airspace Tool, a web-based, interactive tool to evaluate the relationship of proposed buildings with the Airport's critical airspace surfaces. The iALP Airspace Tool is designed to assist planners, developers, and other interested persons with the implementation of the airspace protection policies of the SFO ~~CLUP~~ALUCP. The tool helps users determine: (1) the maximum allowable building height at a given site, and/or (2) whether a building penetrates a critical airspace surface, and by how much, given the proposed building height.

A more detailed description of the iALP Airspace Tool and a tutorial explaining how to use it is presented in **Appendix J**.

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